



Red Hat Enterprise Virtualization 3.6

Self-Hosted Engine Guide

Installing and Maintaining the Red Hat Enterprise Virtualization Self-Hosted Engine

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Abstract

A comprehensive guide to the self-hosted engine.

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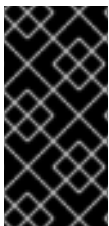
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CHAPTER 1. INTRODUCTION

A self-hosted engine is a virtualized environment in which the engine, or Manager, runs on a virtual machine on the hosts managed by that engine. The virtual machine is created as part of the host configuration, and the Manager is installed and configured in parallel to the host configuration process. The primary benefit of the self-hosted engine is that it requires less hardware to deploy an instance of Red Hat Enterprise Virtualization as the Manager runs as a virtual machine, not on physical hardware. Additionally, the Manager is configured to be highly available. If the host running the Manager virtual machine goes into maintenance mode, or fails unexpectedly, the virtual machine will be migrated automatically to another host in the environment. A minimum of two self-hosted engine hosts are required to support the high availability feature.

Table 1.1. Supported OS versions to Deploy Self-Hosted Engine

System Type	Supported Versions
Red Hat Enterprise Linux Host	7.2
Red Hat Enterprise Virtualization Hypervisor Host	7.2
HostedEngine-VM (Manager)	6.7



IMPORTANT

It is important to synchronize the system clocks of the hosts, Manager, and other servers in the environment to avoid potential timing or authentication issues. To do this, configure the Network Time Protocol (NTP) on each system to synchronize with the same NTP server.

1.1. INSTALLATION OPTIONS

Self-Hosted Engine Hosts

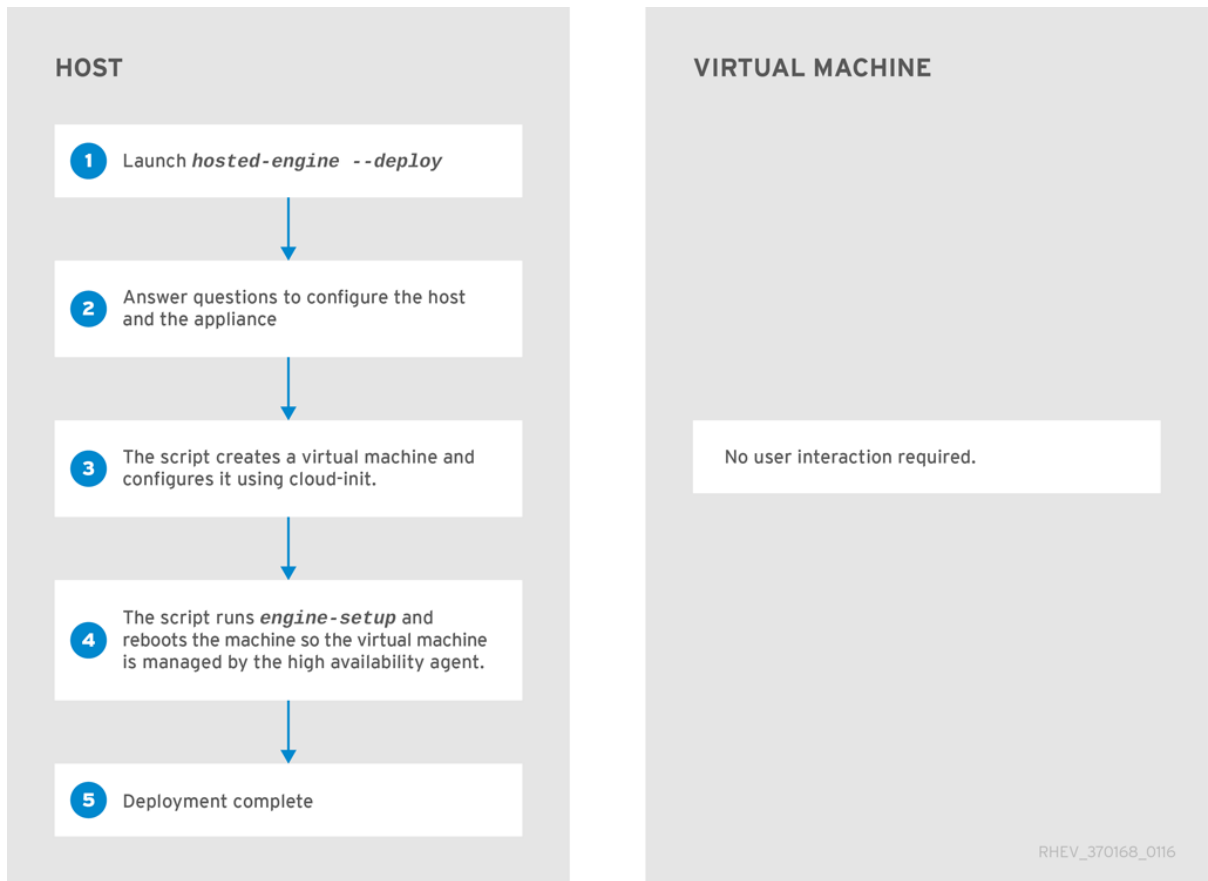
You can use Red Hat Enterprise Virtualization Hypervisors or Red Hat Enterprise Linux hosts, or both.

- Red Hat Enterprise Virtualization Hypervisor is distributed as an ISO file and contains only the packages required for the machine to act as a virtualization host. See [Chapter 2, *Deploying Self-Hosted Engine on Red Hat Enterprise Virtualization Hypervisor*](#)
- Red Hat Enterprise Linux systems subscribed to the appropriate entitlements can be used as virtualization hosts. See [Chapter 3, *Deploying Self-Hosted Engine on a Red Hat Enterprise Linux Host*](#).

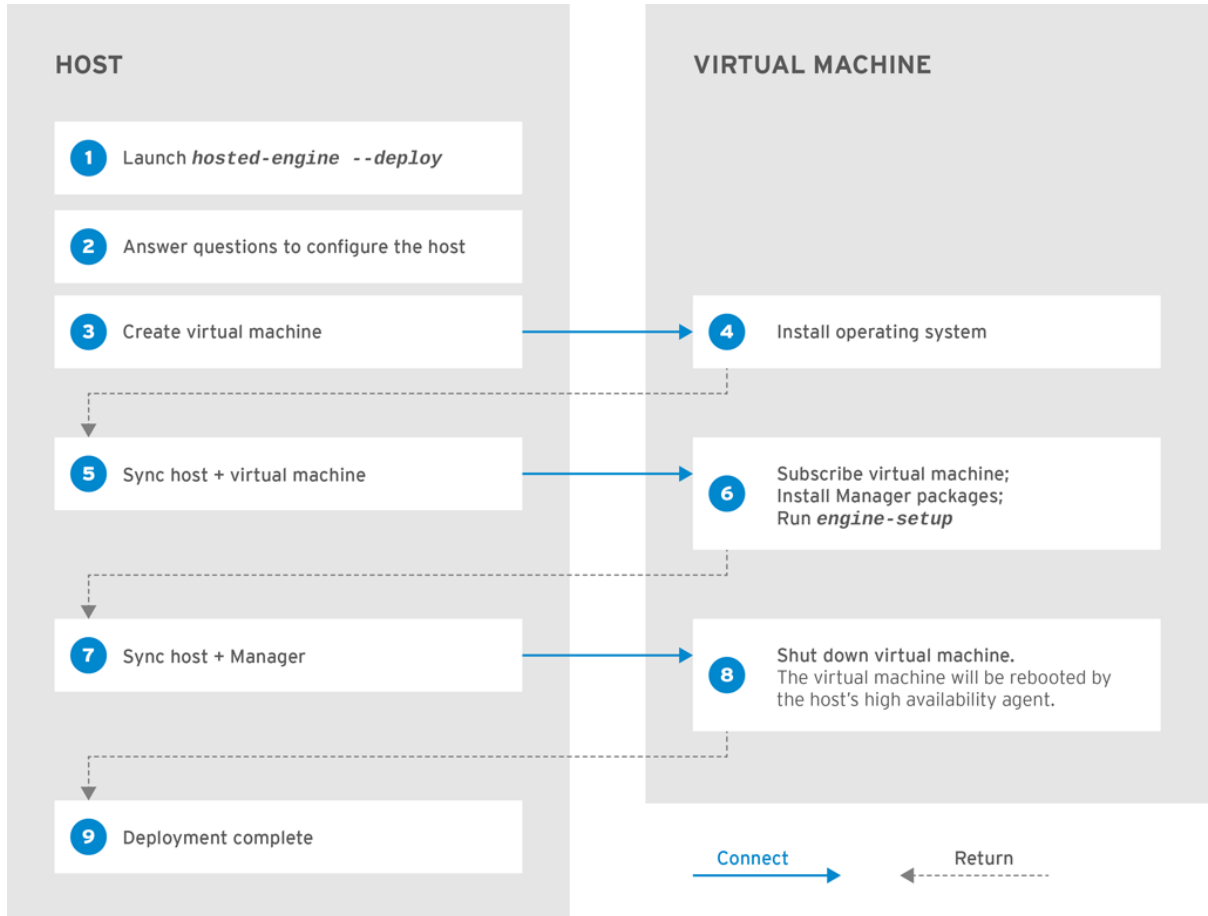
Self-Hosted Engine Manager

You can use the RHEV-M Virtual Appliance, or you can install and configure the Manager virtual machine manually.

- The RHEV-M Virtual Appliance automates the process of installing and configuring the Manager virtual machine, and does not require you to access the virtual machine during the setup.



- Manually installing and configuring the Manager virtual machine is also supported but requires you to access the virtual machine directly during the setup.



CHAPTER 2. DEPLOYING SELF-HOSTED ENGINE ON RED HAT ENTERPRISE VIRTUALIZATION HYPERVISOR

2.1. INSTALLING RED HAT ENTERPRISE VIRTUALIZATION HYPERVISOR

You will need to install a Red Hat Enterprise Virtualization Hypervisor machine before configuring self-hosted engine on it.

- For more information on storage requirements, see [Storage Requirements](#) in the *Installation Guide*. To use the RHEV-M Virtual Appliance for the Manager virtual machine installation, the data partition (`/data`) must be at least 60 GB.
- See [Installing the Red Hat Enterprise Virtualization Hypervisor](#) in the *Installation Guide* for the installation procedure.
- After the Red Hat Enterprise Virtualization Hypervisor is installed, configure the **Network** screen before proceeding to the **Hosted Engine** screen. See [Configuring the Red Hat Enterprise Virtualization Hypervisor](#) in the *Installation Guide*.

2.2. CONFIGURING SELF-HOSTED ENGINE ON RED HAT ENTERPRISE VIRTUALIZATION HYPERVISOR

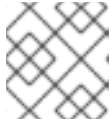
Once you have installed a Red Hat Enterprise Virtualization Hypervisor using the Hypervisor ISO, set up self-hosted engine using the **Hosted Engine** screen. Self-hosted engine is currently supported on Red Hat Enterprise Virtualization Hypervisor 7.

Prerequisites:

- You must have prepared a freshly installed Red Hat Enterprise Virtualization Hypervisor (RHEV-H).
- You must have the Manager virtual machine operating system installation media. The recommended method is to use the RHEV-M Virtual Appliance to automate the setup. To use the appliance, the data partition (`/data`) must be at least 60 GB. The appliance must be accessible from the hypervisor via HTTP. Log in to the [Customer Portal](#), and download the RHEV-M Virtual Appliance from https://access.redhat.com/downloads/content/150/ver=3.6/rhel-6/3.6/x86_64/product-software.
- You must have prepared storage for your self-hosted engine environment. At least two storage domains are required:
 - A shared storage domain dedicated to the Manager virtual machine. This domain is created during the self-hosted engine deployment, and must be at least 60 GB.
 - A data storage domain for regular virtual machine data. This domain must be added to the self-hosted engine environment after completing the deployment.

For more information on preparing storage for your deployment, see the [Storage](#) chapter of the *Administration Guide*.

- You must have a fully qualified domain name prepared for your Manager and Hypervisor host. Forward and reverse lookup records must both be set in the DNS.

**NOTE**

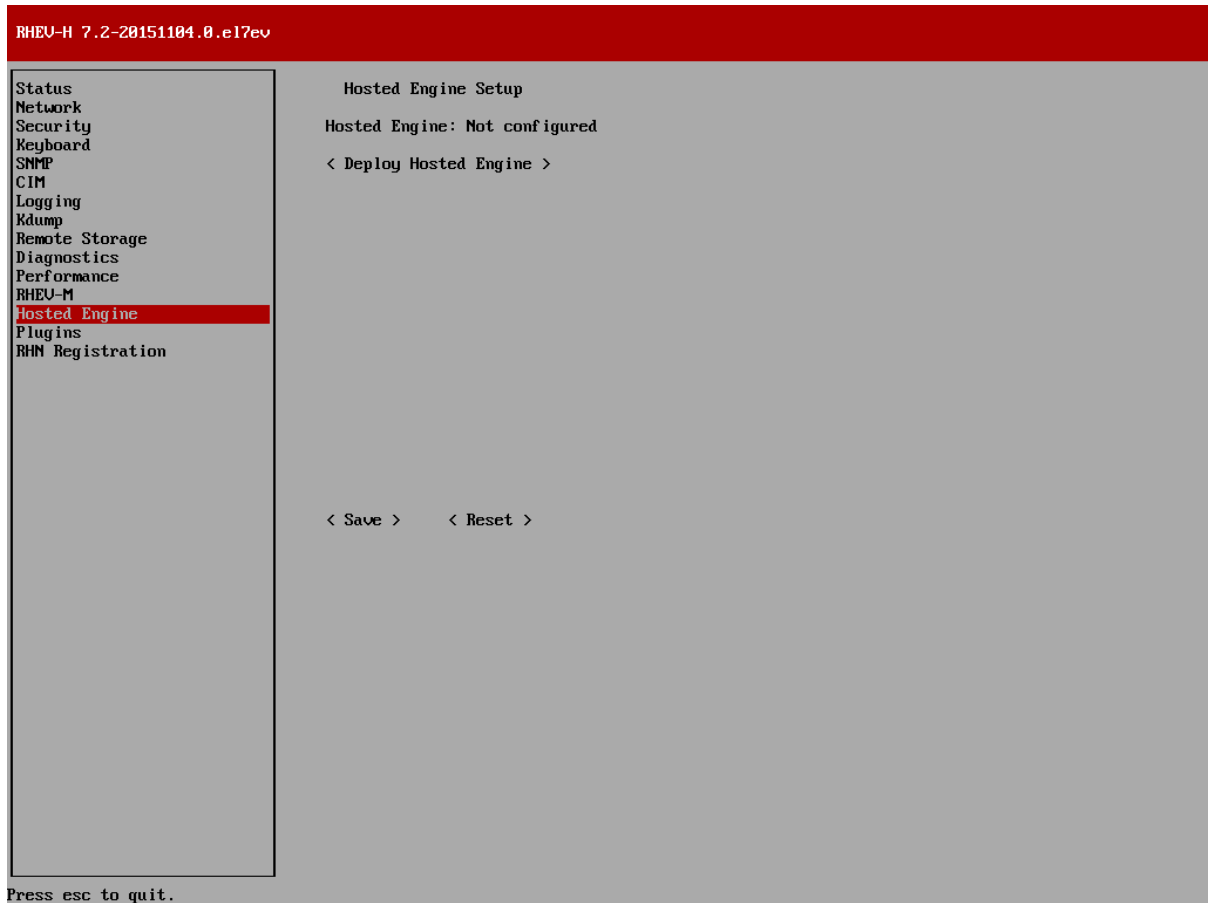
For evaluation purposes, you can use the `/etc/hosts` file for name resolution.

- You must have enabled SSH password authentication in the **Security** screen.

Procedure 2.1. Setting Up Self-Hosted Engine on RHEV-H

This example configures self-hosted engine on a Red Hat Enterprise Virtualization Hypervisor 7.

1. Click **Deploy Hosted Engine**.



2. Specify the Red Hat Enterprise Virtualization Manager virtual machine installation method. To install using the RHEV-M Virtual Appliance, enter the URL to the appliance. For example: **`http://file.domain.com/rhev-m-appliance.ova`**. This is the recommended Manager installation method. Click **Deploy**, and click **Close**.

Alternatively, select **PXE Boot Engine VM** if PXE installation is the desired installation method.

3. Click **OK** to start the **hosted-engine** deployment script. Press **Enter** to confirm to continue.

```

Begin Hosted Engine Setup
Setup will be ran with screen enabled that can be reconnected in the event
of a timeout or connection failure.

```

```

It can be reconnected by running 'screen -d -r'

```

```

< OK >          < Cancel >

```

4. Configuring Storage

Select the type of storage to use.

During customization use CTRL-D to abort.

Please specify the storage you would like to use (glusterfs, iscsi, fc, nfs3, nfs4)[nfs3]:

- o For NFS storage types, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.

Please specify the full shared storage connection path to use
(example: host:/path): *storage.example.com:/hosted_engine/nfs*

- o For iSCSI, specify the iSCSI portal IP address, port, user name and password, and select a target name from the auto-detected list. You can only select one iSCSI target during the deployment.

Please specify the iSCSI portal IP address:

Please specify the iSCSI portal port [3260]:

Please specify the iSCSI portal user:

Please specify the iSCSI portal password:

Please specify the target name (*auto-detected values*) [*default*]:

- o For Gluster storage, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.

IMPORTANT

Only replica 3 Gluster storage is supported. Ensure the following configuration has been made:

- In the `/etc/glusterfs/glusterd.vol` file on all three Gluster servers, set `rpc-auth-allow-insecure` to `on`.

```
option rpc-auth-allow-insecure on
```

- Configure the volume as follows:

```
gluster volume set volume cluster.quorum-type auto
gluster volume set volume network.ping-timeout 10
gluster volume set volume auth.allow \*
gluster volume set volume group virt
gluster volume set volume storage.owner-uid 36
gluster volume set volume storage.owner-gid 36
gluster volume set volume server.allow-insecure on
```

Please specify the full shared storage connection path to use (example: `host:/path`):
`storage.example.com:/hosted_engine/gluster_volume`

- For Fibre Channel, the host bus adapters must be configured and connected, and the **hosted-engine** script will auto-detect the LUNs available. The LUNs must not contain any existing data.

```
The following luns have been found on the requested target:
[1]      3514f0c5447600351      30GiB  XtremIO XtremApp
          status: used, paths: 2 active

[2]      3514f0c5447600352      30GiB  XtremIO XtremApp
          status: used, paths: 2 active
```

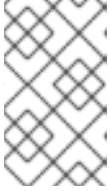
Please select the destination LUN (1, 2) [1]:

Choose the storage domain and storage data center names to be used in the environment.

```
[ INFO ] Installing on first host
Please provide storage domain name. [hosted_storage]:
Local storage datacenter name is an internal name and currently will
not be shown in engine's admin UI.Please enter local datacenter name
[hosted_datacenter]:
```

5. Configuring the Network

The script detects possible network interface controllers (NICs) to use as a management bridge for the environment. It then checks your firewall configuration and offers to modify it for console (SPICE or VNC) access.

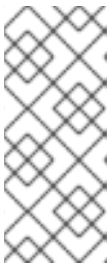
**NOTE**

Configuring a bonded and vlan-tagged network interface as the management bridge is currently not supported. To work around this issue, see <https://access.redhat.com/solutions/1417783> for more information.

```
Please indicate a nic to set rhevm bridge on: (eth1, eth0) [eth1]:
iptables was detected on your computer, do you wish setup to
configure it? (Yes, No)[Yes]: Yes
Please indicate a pingable gateway IP address [X.X.X.X]:
```

6. Configuring the Virtual Machine

The script creates a virtual machine to be configured as the Red Hat Enterprise Virtualization Manager.

**NOTE**

If you want to manually install the Manager virtual machine, see [Appendix A, *Manually Installing the Manager Operating System*](#) to complete the self-hosted engine setup. Using the appliance eases the workflow, because user interaction with the Manager virtual machine is not required. Manual installation allows you to take full control of the installation.

```
[ INFO ] Checking OVF archive content (could take a few minutes
depending on archive size)
[ INFO ] Checking OVF XML content (could take a few minutes
depending on archive size)
    Would you like to use cloud-init to customize the appliance
on the first boot (Yes, No)[Yes]?
    Would you like to generate on-fly a cloud-init no-cloud ISO
image
    or do you have an existing one(Generate, Existing)
[Generate]? Generate
    Please provide the FQDN you would like to use for the
engine appliance.
    Note: This will be the FQDN of the engine VM you are now
going to launch.
    It should not point to the base host or to any other
existing machine.
    Engine VM FQDN: (leave it empty to skip):
manager.example.com
    Automatically execute engine-setup on the engine appliance
on first boot (Yes, No)[Yes]? Yes
    Automatically restart the engine VM as a monitored service
after engine-setup (Yes, No)[Yes]? Yes
    Please provide the domain name you would like to use for
the engine appliance.
    Engine VM domain: [example.com]
    Enter root password that will be used for the engine
appliance (leave it empty to skip): p@ssw0rd
    Confirm appliance root password: p@ssw0rd
    How should the engine VM network be configured (DHCP,
Static)[DHCP]? Static
    Please enter the IP address to be used for the engine VM:
```

```

192.168.x.x
[ INFO ] The engine VM will be configured to use 192.168.x.x/24
        Please provide a comma-separated list (max3) of IP
addresses of domain name servers for the engine VM
        Engine VM DNS (leave it empty to skip):
        Add lines for the appliance itself and for this host to
/etc/hosts on the engine VM?
        Note: ensuring that this host could resolve the engine VM
hostname is still up to you (Yes, No)[No] Yes
        Please specify an alias for the Hosted Engine image
[hosted_engine]:
        The following CPU types are supported by this host:
        - model_Penryn: Intel Penryn Family
        - model_Conroe: Intel Conroe Family
        Please specify the CPU type to be used by the VM
[model_Penryn]:
        Please specify the number of virtual CPUs for the VM
[Defaults to appliance OVF value: 4]:
        You may specify a MAC address for the VM or accept a
randomly generated default [00:16:3e:77:b2:a4]:
        Please specify the console type you would like to use to
connect to the VM (vnc, spice) [vnc]: vnc

```

7. Configuring the Hosted Engine

Specify a name for the hypervisor to be identified in the Red Hat Enterprise Virtualization environment, and the password for the **admin@internal** user to access the Administration Portal. Provide the FQDN for the Manager virtual machine.

```

Enter the name which will be used to identify this host inside the
Administrator Portal [hosted_engine_1]:
Enter 'admin@internal' user password that will be used for accessing
the Administrator Portal: p@ssw0rd
Confirm 'admin@internal' user password: p@ssw0rd
Please provide the name of the SMTP server through which we will
send notifications [localhost]:
Please provide the TCP port number of the SMTP server [25]:
Please provide the email address from which notifications will be
sent [root@localhost]:
Please provide a comma-separated list of email addresses which will
get notifications [root@localhost]:

```

8. Configuration Preview

Before proceeding, the **hosted-engine** script displays the configuration values you have entered, and prompts for confirmation to proceed with these values.

9. Creating the Manager Virtual Machine

The script creates the Manager virtual machine, starts the **ovirt-engine** and high availability services, and connects the hypervisor host and shared storage domain to the Manager virtual machine.

```

You can now connect to the VM with the following command:
/usr/bin/remote-viewer vnc://localhost:5900
Use temporary password "3042QHpx" to connect to vnc console.
Please note that in order to use remote-viewer you need to be able
to run graphical applications.

```

```

This means that if you are using ssh you have to supply the -Y flag
(enables trusted X11 forwarding).
Otherwise you can run the command from a terminal in your preferred
desktop environment.
If you cannot run graphical applications you can connect to the
graphic console from another host or connect to the serial console
using the following command:
socat UNIX-CONNECT:/var/run/ovirt-vmconsole-console/fabbea5a-1989-
411f-8ed7-7abe0917fc66.sock,user=ovirt-vmconsole
STDIO,raw,echo=0,escape=1

If you need to reboot the VM you will need to start it manually
using the command:
hosted-engine --vm-start
You can then set a temporary password using the command:
hosted-engine --add-console-password
[ INFO ] Running engine-setup on the appliance
...
[ INFO ] Engine-setup successfully completed
[ INFO ] Engine is still unreachable
[ INFO ] Engine is still unreachable, waiting...
[ INFO ] Engine replied: DB Up!Welcome to Health Status!
[INFO ] Connecting to the Engine
        Enter the name of the cluster to which you want to add the
host (Default) [Default]:
[ INFO ] Waiting for the host to become operational in the engine.
This may take several minutes... [ INFO ] Still waiting for VDSM
host to become operational...
[ INFO ] The VDSM Host is now operational
[ INFO ] Shutting down the engine VM
[ INFO ] Enabling and starting HA services
[ INFO ] Saving hosted-engine configuration on the shared storage
domain

        Hosted Engine successfully set up
[ INFO ] Stage: Clean up
[ INFO ] Generating answer file '/var/lib/ovirt-hosted-engine-
setup/answers/answers-2015xx.conf'
[ INFO ] Generating answer file '/etc/ovirt-hosted-
engine/answers.conf'
[ INFO ] Stage: Pre-termination
[ INFO ] Stage: Termination

[screen is terminating]
Hit <Return> to return to the TUI

```

When the **hosted-engine** deployment script completes successfully, the Red Hat Enterprise Virtualization Manager name and status are displayed in the **Hosted Engine** screen. This may take a few minutes to appear. The Red Hat Enterprise Virtualization Manager is configured and running on your hypervisor host. The Manager has already configured the data center, cluster, hypervisor host, the Manager virtual machine, and a shared storage domain dedicated to the Manager virtual machine.



IMPORTANT

Log in as the **admin@internal** user to continue configuring the Manager and add further resources. You must create another data domain for the data center to be initialized to host regular virtual machine data, and for the Manager virtual machine to be visible. See [Storage](#) in the *Administration Guide* for different storage options and on how to add a data storage domain.

Link your Red Hat Enterprise Virtualization Manager to a directory server so you can add additional users to the environment. Red Hat Enterprise Virtualization supports many directory server types; for example, Red Hat Directory Server (RHDS), Red Hat Identity Management (IdM), Active Directory, and many other types. Add a directory server to your environment using the **ovirt-engine-extension-aaa-ldap-setup** interactive setup script. For more information, see [Configuring an External LDAP Provider](#) in the *Administration Guide*.

The **ovirt-hosted-engine-setup** script also saves the answers you gave during configuration to a file, to help with disaster recovery. If a destination is not specified using the **--generate-answer=<file>** argument, the answer file is generated at **/etc/ovirt-hosted-engine/answers.conf**.



NOTE

SSH password authentication is not enabled by default on the RHEV-M Virtual Appliance. You can enable SSH password authentication by accessing the Red Hat Enterprise Virtualization Manager virtual machine through the SPICE or VNC console. Verify that the **sshd** service is running. Edit **/etc/ssh/sshd_config** and change the following two options to **yes**:

- **PasswordAuthentication**
- **PermitRootLogin**

Restart the **sshd** service for the changes to take effect.

2.3. ADMINISTERING THE MANAGER VIRTUAL MACHINE

The **hosted-engine** utility is provided to assist with administering the Manager virtual machine.

To check the status of the Manager virtual machine, in the text user interface, select the **Hosted Engine** screen and select **< Hosted Engine VM status >**.

See [Section 4.1, “Troubleshooting the Manager Virtual Machine”](#) for more information.

CHAPTER 3. DEPLOYING SELF-HOSTED ENGINE ON A RED HAT ENTERPRISE LINUX HOST

3.1. SUBSCRIBING TO THE REQUIRED ENTITLEMENTS

Register the system and subscribe to the required entitlements.

Procedure 3.1. Subscribing to Required Entitlements Using Subscription Manager

1. Register your system with the Content Delivery Network, entering your Customer Portal **Username** and **Password** when prompted:

```
# subscription-manager register
```

2. Find the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** subscription pools and note down the pool IDs.

```
# subscription-manager list --available
```

3. Use the pool identifiers located in the previous step to attach the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** entitlements to the system:

```
# subscription-manager attach --pool=poolid
```

4. Disable all existing repositories:

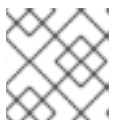
```
# subscription-manager repos --disable=*
```

5. Enable the required repositories for Red Hat Enterprise Linux 7:

```
# subscription-manager repos --enable=rhel-7-server-rpms  
# subscription-manager repos --enable=rhel-7-server-rhev-mgmt-agent-rpms
```

6. Ensure that all packages currently installed are up to date:

```
# yum update
```



NOTE

Reboot the machine if any kernel related packages have been updated.

3.2. INSTALLING THE SELF-HOSTED ENGINE PACKAGES

Procedure 3.2. Installing the Self-Hosted Engine

1. Install the self-hosted engine packages:

```
# yum install ovirt-hosted-engine-setup
```

-
- 2. Optionally install the RHEV-M Virtual Appliance package if you intend to use the appliance for the Manager virtual machine installation:

```
# yum install rhevm-appliance
```

You can also use a CD-ROM, disk, or PXE installation media for the Manager operating system installation. The physical CD-ROM drive is not supported.

Proceed to the next section to deploy and configure self-hosted engine on a Red Hat Enterprise Linux host.

3.3. CONFIGURING A RHEL-BASED SELF-HOSTED ENGINE

The **hosted-engine** script is provided to assist with configuring the host hypervisor and Manager virtual machine. The script asks you a series of questions, and configures your environment based on your answers.

Ensure that you have completed the following prerequisites:

Prerequisites

- You must have a freshly installed Red Hat Enterprise Linux 7 system with the `ovirt-hosted-engine-setup` package installed.
- You must have prepared storage for your self-hosted engine environment. At least two storage domains are required:
 - A shared storage domain dedicated to the Manager virtual machine. This domain is created during the self-hosted engine deployment, and must be at least 60 GB.
 - A data storage domain for regular virtual machine data. This domain must be added to the self-hosted engine environment after completing the deployment.

For more information on preparing storage for your deployment, see the [Storage](#) chapter of the *Administration Guide*.

- You must have a fully qualified domain name prepared for your Manager and the hypervisor host. Forward and reverse lookup records must both be set in the DNS.
- You must have prepared either CD-ROM, disk, or PXE installation media for the Manager operating system installation. The recommended method is to select the disk option and use the RHEV-M Virtual Appliance for the Manager installation. Obtain the RHEV-M Virtual Appliance by installing the `rhevm-appliance` package. To use the CD-ROM option, you must have an ISO file available. The physical CD-ROM drive is not supported.
- To use the RHEV-M Virtual Appliance for the Manager installation, ensure one directory is at least 60 GB. The **hosted-engine** script first checks if `/var/tmp` has enough space to extract the appliance files. If not, you can specify a different directory.

Procedure 3.3. Configuring a RHEL-based Self-Hosted Engine

1. Initiating Hosted Engine Deployment

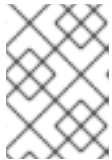
Run the **hosted-engine** script. To escape the script at any time, use the **CTRL+D** keyboard combination to abort deployment. It is recommended to use the **screen** window manager to run

the script to avoid losing the session in case of network or terminal disruption. If not already installed, install the screen package, which is available in the standard Red Hat Enterprise Linux repository.

```
# yum install screen

# screen

# hosted-engine --deploy
```



NOTE

In the event of session timeout or connection disruption, run **screen -d -r** to recover the **hosted-engine** deployment session.

2. Configuring Storage

Select the type of storage to use.

```
During customization use CTRL-D to abort.
Please specify the storage you would like to use (glusterfs, iscsi,
fc, nfs3, nfs4)[nfs3]:
```

- o For NFS storage types, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.

```
Please specify the full shared storage connection path to use
(example: host:/path): storage.example.com:/hosted_engine/nfs
```

- o For iSCSI, specify the iSCSI portal IP address, port, user name and password, and select a target name from the auto-detected list. You can only select one iSCSI target during the deployment.

```
Please specify the iSCSI portal IP address:
Please specify the iSCSI portal port [3260]:
Please specify the iSCSI portal user:
Please specify the iSCSI portal password:
Please specify the target name (auto-detected values) [default]:
```

- o For Gluster storage, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.

IMPORTANT

Only replica 3 Gluster storage is supported. Ensure the following configuration has been made:

- In the `/etc/glusterfs/glusterd.vol` file on all three Gluster servers, set `rpc-auth-allow-insecure` to `on`.

```
option rpc-auth-allow-insecure on
```

- Configure the volume as follows:

```
gluster volume set volume cluster.quorum-type auto
gluster volume set volume network.ping-timeout 10
gluster volume set volume auth.allow \*
gluster volume set volume group virt
gluster volume set volume storage.owner-uid 36
gluster volume set volume storage.owner-gid 36
gluster volume set volume server.allow-insecure on
```

Please specify the full shared storage connection path to use (example: `host:/path`):
`storage.example.com:/hosted_engine/gluster_volume`

- For Fibre Channel, the host bus adapters must be configured and connected, and the **hosted-engine** script will auto-detect the LUNs available. The LUNs must not contain any existing data.

```
The following luns have been found on the requested target:
[1]    3514f0c5447600351    30GiB  XtremIO XtremApp
        status: used, paths: 2 active

[2]    3514f0c5447600352    30GiB  XtremIO XtremApp
        status: used, paths: 2 active
```

Please select the destination LUN (1, 2) [1]:

Choose the storage domain and storage data center names to be used in the environment.

```
[ INFO ] Installing on first host
Please provide storage domain name. [hosted_storage]:
Local storage datacenter name is an internal name and currently will
not be shown in engine's admin UI.Please enter local datacenter name
[hosted_datacenter]:
```

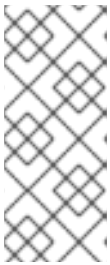
3. Configuring the Network

The script detects possible network interface controllers (NICs) to use as a management bridge for the environment. It then checks your firewall configuration and offers to modify it for console (SPICE or VNC) access.

**NOTE**

Configuring a bonded and vlan-tagged network interface as the management bridge is currently not supported. To work around this issue, see <https://access.redhat.com/solutions/1417783> for more information.

```
Please indicate a nic to set rhevm bridge on: (eth1, eth0) [eth1]:
iptables was detected on your computer, do you wish setup to
configure it? (Yes, No)[Yes]: Yes
Please indicate a pingable gateway IP address [X.X.X.X]:
```

4. Configuring the Virtual Machine**NOTE**

If you want to manually install the Manager virtual machine, see [Appendix A, *Manually Installing the Manager Operating System*](#) to complete the self-hosted engine setup. Using the appliance eases the workflow, because user interaction with the Manager virtual machine is not required. Manual installation allows you to take full control of the installation.

Select **disk** for the boot device type, and the script will automatically detect the RHEV-M Appliances available. Specify the memory size.

```
Please specify the device to boot the VM from (cdrom, disk,
pxe) [disk]:
[ INFO ] Detecting available oVirt engine appliances
The following appliance have been found on your system:
      [1] - The oVirt Engine Appliance image (OVA)
      [2] - Directly select an OVA file
Please select an appliance (1, 2) [1]:
[ INFO ] Checking OVF archive content (could take a few minutes
depending on archive size)
Please specify the memory size of the appliance in MB
(Defaultts to OVF value: 16384):
```

Specify **Yes** if you want cloud-init to take care of the initial configuration of the Manager virtual machine. Specify **Generate** for cloud-init to take care of tasks like setting the root password, configuring networking, configuring the host name, injecting an answers file for **engine-setup** to use, and running **engine-setup** on boot. Optionally, select **Existing** if you have an existing cloud-init script to take care of more sophisticated functions of cloud-init. Specify the FQDN for the Manager virtual machine. Specify a MAC address for the HostedEngine-VM, or accept a randomly generated one. The MAC address can be used to update your DHCP and DNS server prior to installing the operating system on the virtual machine.

**NOTE**

For more information on cloud-init, see <https://cloudinit.readthedocs.org/en/latest/>.

```
Would you like to use cloud-init to customize the appliance on the
first boot (Yes, No)[Yes]? Yes
Would you like to generate on-fly a cloud-init no-cloud ISO image or
```

```

do you have an existing one(Generate, Existing)[Generate]? Generate
Please provide the FQDN you would like to use for the engine
appliance.
Note: This will be the FQDN of the engine VM you are now going to
launch.
It should not point to the base host or to any other existing
machine.
Engine VM FQDN: (leave it empty to skip): manager.example.com
Automatically execute engine-setup on the engine appliance on first
boot (Yes, No)[Yes]? Yes
Automatically restart the engine VM as a monitored service after
engine-setup (Yes, No)[Yes]? Yes
Please provide the domain name you would like to use for the engine
appliance.
Engine VM domain: [example.com]
Enter root password that will be used for the engine appliance
(leave it empty to skip): p@ssw0rd
Confirm appliance root password: p@ssw0rd
How should the engine VM network be configured (DHCP, Static)[DHCP]?
Static
Please enter the IP address to be used for the engine VM:
192.168.x.x
Please provide a comma-separated list (max3) of IP addresses of
domain name servers for the engine VM
Engine VM DNS (leave it empty to skip):
Add lines for the appliance itself and for this host to /etc/hosts
on the engine VM?
Note: ensuring that this host could resolve the engine VM hostname
is still up to you (Yes, No)[No] Yes
Please specify an alias for the Hosted Engine image [hosted_engine]:
The following CPU types are supported by this host:
  - model_Penryn: Intel Penryn Family
  - model_Conroe: Intel Conroe Family
Please specify the CPU type to be used by the VM [model_Penryn]:
Please specify the number of virtual CPUs for the VM [Defaults to
appliance OVF value: 4]:
You may specify a MAC address for the VM or accept a randomly
generated default [00:16:3e:77:b2:a4]:
Please specify the console type you would like to use to connect to
the VM (vnc, spice) [vnc]: vnc

```

5. Configuring the Hosted Engine

Specify a name for hypervisor host to be identified in the Administration Portal, and the password for the **admin@internal** user to access the Administration Portal. Provide the name and TCP port number of the SMTP server, the email address used to send email notifications, and a comma-separated list of email addresses to receive these notifications.

```

Enter the name which will be used to identify this host inside the
Administrator Portal [hosted_engine_1]:
Enter 'admin@internal' user password that will be used for accessing
the Administrator Portal: p@ssw0rd
Confirm 'admin@internal' user password: p@ssw0rd
Please provide the name of the SMTP server through which we will
send notifications [localhost]:
Please provide the TCP port number of the SMTP server [25]:
Please provide the email address from which notifications will be

```

```
sent [root@localhost]:
```

```
Please provide a comma-separated list of email addresses which will
get notifications [root@localhost]:
```

6. Configuration Preview

Before proceeding, the **hosted-engine** script displays the configuration values you have entered, and prompts for confirmation to proceed with these values.

7. Creating the Manager Virtual Machine

The script creates the Manager virtual machine, starts the **ovirt-engine** and high availability services, and connects the hypervisor host and shared storage domain to the Manager virtual machine.

You can now connect to the VM with the following command:

```
/usr/bin/remote-viewer vnc://localhost:5900
```

Use temporary password "3042QHpx" to connect to vnc console.

Please note that in order to use remote-viewer you need to be able to run graphical applications.

This means that if you are using ssh you have to supply the -Y flag (enables trusted X11 forwarding).

Otherwise you can run the command from a terminal in your preferred desktop environment.

If you cannot run graphical applications you can connect to the graphic console from another host or connect to the serial console using the following command:

```
socat UNIX-CONNECT:/var/run/ovirt-vmconsole-console/fabbea5a-1989-
411f-8ed7-7abe0917fc66.sock,user=ovirt-vmconsole
STDIO,raw,echo=0,escape=1
```

If you need to reboot the VM you will need to start it manually using the command:

```
hosted-engine --vm-start
```

You can then set a temporary password using the command:

```
hosted-engine --add-console-password
```

```
[ INFO ] Running engine-setup on the appliance
```

```
...
```

```
[ INFO ] Engine-setup successfully completed
```

```
[ INFO ] Engine is still unreachable
```

```
[ INFO ] Engine is still unreachable, waiting...
```

```
[ INFO ] Engine replied: DB Up!Welcome to Health Status!
```

```
[ INFO ] Connecting to the Engine
```

```
Enter the name of the cluster to which you want to add the
host (Default) [Default]:
```

```
[ INFO ] Waiting for the host to become operational in the engine.
```

```
This may take several minutes... [ INFO ] Still waiting for VDSM
```

```
host to become operational...
```

```
[ INFO ] The VDSM Host is now operational
```

```
[ INFO ] Shutting down the engine VM
```

```
[ INFO ] Enabling and starting HA services
```

```
[ INFO ] Saving hosted-engine configuration on the shared storage
domain
```

```
Hosted Engine successfully set up
```

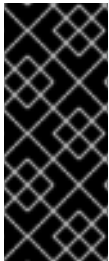
```
[ INFO ] Stage: Clean up
```

```
[ INFO ] Generating answer file '/var/lib/ovirt-hosted-engine-
setup/answers/answers-2015xx.conf'
```

```
[ INFO ] Generating answer file '/etc/ovirt-hosted-
```

```
engine/answers.conf'
[ INFO ] Stage: Pre-termination
[ INFO ] Stage: Termination
```

When the **hosted-engine** deployment script completes successfully, the Red Hat Enterprise Virtualization Manager is configured and running on your hypervisor host. The Manager has already configured the data center, cluster, hypervisor host, the Manager virtual machine, and a shared storage domain dedicated to the Manager virtual machine.



IMPORTANT

Log in as the **admin@internal** user to continue configuring the Manager and add further resources. You must create another data domain for the data center to be initialized to host regular virtual machine data, and for the Manager virtual machine to be visible. See [Storage](#) in the *Administration Guide* for different storage options and on how to add a data storage domain.

Link your Red Hat Enterprise Virtualization Manager to a directory server so you can add additional users to the environment. Red Hat Enterprise Virtualization supports many directory server types; for example, Red Hat Directory Server (RHDS), Red Hat Identity Management (IdM), Active Directory, and many other types. Add a directory server to your environment using the **ovirt-engine-extension-aaa-ldap-setup** interactive setup script. For more information, see [Configuring an External LDAP Provider](#) in the *Administration Guide*.

The **ovirt-hosted-engine-setup** script also saves the answers you gave during configuration to a file, to help with disaster recovery. If a destination is not specified using the **--generate-answer=<file>** argument, the answer file is generated at **/etc/ovirt-hosted-engine/answers.conf**.



NOTE

SSH password authentication is not enabled by default on the RHEV-M Virtual Appliance. You can enable SSH password authentication by accessing the Red Hat Enterprise Virtualization Manager virtual machine through the SPICE or VNC console. Verify that the **sshd** service is running. Edit **/etc/ssh/sshd_config** and change the following two options to **yes**:

- **PasswordAuthentication**
- **PermitRootLogin**

Restart the **sshd** service for the changes to take effect.

3.4. ADMINISTERING THE MANAGER VIRTUAL MACHINE

The **hosted-engine** utility is provided to assist with administering the Manager virtual machine. It can be run on any self-hosted engine hosts in the environment. For all the options, run **hosted-engine --help**. For additional information on a specific command, run **hosted-engine --command --help**.

See [Section 4.1, “Troubleshooting the Manager Virtual Machine”](#) for more information.

CHAPTER 4. TROUBLESHOOTING A SELF-HOSTED ENGINE DEPLOYMENT

4.1. TROUBLESHOOTING THE MANAGER VIRTUAL MACHINE

Procedure 4.1. Troubleshooting the Manager Virtual Machine

1. Check the status of the Manager virtual machine by running `hosted-engine --vm-status`.



NOTE

Any changes made to the Manager virtual machine will take about 20 seconds before they are reflected in the status command output.

If the Manager virtual machine is up and running as normal, you will see the following output:

```
--== Host 1 status ==--

Status up-to-date           : True
Hostname                    : hypervisor.example.com
Host ID                     : 1
Engine status               : {"health": "good",
"vm": "up", "detail": "up"}
Score                       : 3400
stopped                     : False
Local maintenance          : False
crc32                       : 99e57eba
Host timestamp              : 248542
```

2. If the **health** is bad or the **vm** is down, enable the global maintenance mode so that the hosts are no longer managed by the HA services.
 - o In the Administration Portal, right-click the engine virtual machine, and select **Enable Global HA Maintenance**.
 - o You can also set the maintenance mode from the command line:

```
# hosted-engine --set-maintenance --mode=global
```

3. If the Manager virtual machine is down, start the Manager virtual machine. If the virtual machine is up, skip this step.

```
# hosted-engine ---vm-start
```

4. Set the console password:

```
# hosted-engine --add-console-password
```

5. Connect to the console. When prompted, enter the password set in the previous step. For more console options, see <https://access.redhat.com/solutions/2221461>.

```
# hosted-engine --console
```

6. Determine why the Manager virtual machine is down or in a bad health state. Check `/var/log/messages` and `/var/log/ovirt-engine/engine.log`. After fixing the issue, reboot the Manager virtual machine.
7. Log in to the Manager virtual machine as root and verify that the `ovirt-engine` service is up and running:

```
# service ovirt-engine status
```

8. After ensuring the Manager virtual machine is up and running, close the console session and disable the maintenance mode to enable the HA services again:

```
# hosted-engine --set-maintenance --mode=none
```

Additional Troubleshooting Commands:



IMPORTANT

Contact the Red Hat Support Team if you feel you need to run any of these commands to troubleshoot your self-hosted engine environment.

- **hosted-engine --reinitialize-lockspace**: This command is used when the sanlock lockspace is broken. Ensure that the global maintenance mode is enabled and that the Manager virtual machine is stopped before reinitializing the sanlock lockspaces.
- **hosted-engine --clean-metadata**: Remove the metadata for a host's agent from the global status database. This makes all other hosts forget about this host. Ensure that the target host is down and that the global maintenance mode is enabled.
- **hosted-engine --check-liveliness**: This command checks the liveliness page of the ovirt-engine service. You can also check by connecting to `https://engine-fqdn/ovirt-engine/services/health/` in a web browser.
- **hosted-engine --connect-storage**: This command instructs VDSM to prepare all storage connections needed for the host and the Manager virtual machine. This is normally run in the back-end during the self-hosted engine deployment. Ensure that the global maintenance mode is enabled if you need to run this command to troubleshoot storage issues.

4.2. CLEANING UP A FAILED SELF-HOSTED ENGINE DEPLOYMENT

If a self-hosted engine deployment was interrupted, subsequent deployments will fail with the following error:

```
Failed to connect to broker, the number of errors has exceeded the limit.
```

See <https://access.redhat.com/solutions/2121581> for more information on how to clean up a failed deployment.

CHAPTER 5. MIGRATING FROM BARE METAL TO A RHEL-BASED SELF-HOSTED ENVIRONMENT

5.1. MIGRATING TO A SELF-HOSTED ENVIRONMENT

To migrate an existing instance of a standard Red Hat Enterprise Virtualization to a self-hosted engine environment, use the **hosted-engine** script to assist with the task. The script asks you a series of questions, and configures your environment based on your answers. The Manager from the standard Red Hat Enterprise Virtualization environment is referred to as the BareMetal-Manager in the following procedure.

The migration involves the following key actions:

- Run the **hosted-engine** script to configure the host to be used as a self-hosted engine host and to create a new Red Hat Enterprise Virtualization virtual machine.
- Back up the the engine database and configuration files using the **engine-backup** tool, copy the backup to the new Manager virtual machine, and restore the backup using the `--mode=restore` parameter of **engine-backup**. Run **engine-setup** to complete the Manager virtual machine configuration.
- Follow the **hosted-engine** script to complete the setup.

In the following procedure, the Manager operating system is installed manually. Optionally, use the RHEV-M Virtual Appliance to ease that part of the process. See [Section 5.2, “Migrating to a Self-Hosted Environment using the RHEV-M Virtual Appliance”](#) for more information.

Prerequisites

- Prepare a new hypervisor host with the `ovirt-hosted-engine-setup` package installed. See [Chapter 3, *Deploying Self-Hosted Engine on a Red Hat Enterprise Linux Host*](#) for more information on subscriptions and package installation. The host must be a supported version of the current Red Hat Enterprise Virtualization environment.



NOTE

If you intend to use an existing host, place the host in maintenance and remove it from the existing environment. See [Removing a Host](#) in the *Administration Guide* for more information.

- Prepare storage for your self-hosted engine environment. The self-hosted engine requires a shared storage domain dedicated to the Manager virtual machine. This domain is created during deployment, and must be at least 60 GB. For more information on preparing storage for your deployment, see the [Storage](#) chapter of the *Administration Guide*.
- Prepare an installation media of the same version of the operating system used for the BareMetal-Manager.
- The fully qualified domain name of the new Manager must be the same fully qualified domain name as that of the BareMetal-Manager. Forward and reverse lookup records must both be set in DNS.
- You must have access and can make changes to the BareMetal-Manager.

Procedure 5.1. Migrating to a Self-Hosted Environment

1. Initiating a Self-Hosted Engine Deployment



NOTE

If your original installation was version 3.5 or earlier, and the current name of the management network is *rhevm*, you must modify the answer file prior to running **hosted-engine --deploy**. For more information, see <https://access.redhat.com/solutions/2292861>.

Run the **hosted-engine** script. To escape the script at any time, use the **CTRL+D** keyboard combination to abort deployment. It is recommended to use the **screen** window manager to run the script to avoid losing the session in case of network or terminal disruption. If not already installed, install the **screen** package, which is available in the standard Red Hat Enterprise Linux repository.

```
# yum install screen
```

```
# screen
```

```
# hosted-engine --deploy
```



NOTE

In the event of session timeout or connection disruption, run **screen -d -r** to recover the **hosted-engine** deployment session.

2. Configuring Storage

Select the type of storage to use.

```
During customization use CTRL-D to abort.
Please specify the storage you would like to use (glusterfs, iscsi,
fc, nfs3, nfs4)[nfs3]:
```

- o For NFS storage types, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.

```
Please specify the full shared storage connection path to use
(example: host:/path): storage.example.com:/hosted_engine/nfs
```

- o For iSCSI, specify the iSCSI portal IP address, port, user name and password, and select a target name from the auto-detected list. You can only select one iSCSI target during the deployment.

```
Please specify the iSCSI portal IP address:
Please specify the iSCSI portal port [3260]:
Please specify the iSCSI portal user:
Please specify the iSCSI portal password:
Please specify the target name (auto-detected values) [default]:
```

- o For Gluster storage, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.



IMPORTANT

Only replica 3 Gluster storage is supported. Ensure the following configuration has been made:

- In the `/etc/glusterfs/glusterd.vol` file on all three Gluster servers, set `rpc-auth-allow-insecure` to `on`.

```
option rpc-auth-allow-insecure on
```

- Configure the volume as follows:

```
gluster volume set volume cluster.quorum-type auto
gluster volume set volume network.ping-timeout 10
gluster volume set volume auth.allow \*
gluster volume set volume group virt
gluster volume set volume storage.owner-uid 36
gluster volume set volume storage.owner-gid 36
gluster volume set volume server.allow-insecure on
```

Please specify the full shared storage connection path to use (example: `host:/path`):

```
storage.example.com:/hosted_engine/gluster_volume
```

- o For Fibre Channel, the host bus adapters must be configured and connected, and the **hosted-engine** script will auto-detect the LUNs available. The LUNs must not contain any existing data.

The following luns have been found on the requested target:

```
[1]      3514f0c5447600351      30GiB  XtremIO XtremApp
          status: used, paths: 2 active

[2]      3514f0c5447600352      30GiB  XtremIO XtremApp
          status: used, paths: 2 active
```

Please select the destination LUN (1, 2) [1]:

Choose the storage domain and storage data center names to be used in the environment.

```
[ INFO ] Installing on first host
Please provide storage domain name. [hosted_storage]:
Local storage datacenter name is an internal name and currently will
not be shown in engine's admin UI.Please enter local datacenter name
[hosted_datacenter]:
```

3. Configuring the Network

The script detects possible network interface controllers (NICs) to use as a management bridge for the environment. It then checks your firewall configuration and offers to modify it for console (SPICE or VNC) access HostedEngine-VM. Provide a pingable gateway IP address, to be used

by the **ovirt-ha-agent** to help determine a host's suitability for running HostedEngine-VM.

```
Please indicate a nic to set rhevm bridge on: (eth1, eth0) [eth1]:
iptables was detected on your computer, do you wish setup to
configure it? (Yes, No)[Yes]:
Please indicate a pingable gateway IP address [X.X.X.X]:
```

4. Configuring the Virtual Machine

The script creates a virtual machine to be configured as the Red Hat Enterprise Virtualization Manager, referred to in this procedure as HostedEngine-VM. Specify the boot device and, if applicable, the path name of the installation media, the CPU type, the number of virtual CPUs, and the disk size. Specify a MAC address for the HostedEngine-VM, or accept a randomly generated one. The MAC address can be used to update your DHCP server prior to installing the operating system on the virtual machine. Specify memory size and console connection type for the creation of HostedEngine-VM.

```
Please specify the device to boot the VM from (cdrom, disk, pxe)
[cdrom]:
The following CPU types are supported by this host:
    - model_Penryn: Intel Penryn Family
    - model_Conroe: Intel Conroe Family
Please specify the CPU type to be used by the VM [model_Penryn]:
Please specify the number of virtual CPUs for the VM [Defaults to
minimum requirement: 2]:
Please specify the disk size of the VM in GB [Defaults to minimum
requirement: 25]:
You may specify a MAC address for the VM or accept a randomly
generated default [00:16:3e:77:b2:a4]:
Please specify the memory size of the VM in MB [Defaults to minimum
requirement: 4096]:
Please specify the console type you want to use to connect to the VM
(vnc, spice) [vnc]:
```

5. Configuring the Self-Hosted Engine

Specify the name for Host-HE1 to be identified in the Red Hat Enterprise Virtualization environment, and the password for the **admin@internal** user to access the Administration Portal. Provide the FQDN for HostedEngine-VM; this procedure uses the FQDN *manager.example.com*. Finally, provide the name and TCP port number of the SMTP server, the email address used to send email notifications, and a comma-separated list of email addresses to receive these notifications.



IMPORTANT

The FQDN provided for the engine must be the same FQDN provided for the BareMetal-Manager.

```
Enter the name which will be used to identify this host inside the
Administrator Portal [hosted_engine_1]: Host-HE1
Enter 'admin@internal' user password that will be used for accessing
the Administrator Portal:
Confirm 'admin@internal' user password:
Please provide the FQDN for the engine you want to use. This needs
to match the FQDN that you will use for the engine installation
within the VM: manager.example.com
```

```
Please provide the name of the SMTP server through which we will
send notifications [localhost]:
Please provide the TCP port number of the SMTP server [25]:
Please provide the email address from which notifications will be
sent [root@localhost]:
Please provide a comma-separated list of email addresses which will
get notifications [root@localhost]:
```

6. Configuration Preview

Before proceeding, the **hosted-engine** script displays the configuration values you have entered, and prompts for confirmation to proceed with these values.

```
Bridge interface                : eth1
Engine FQDN                     : manager.example.com
Bridge name                     : rhevm
SSH daemon port                 : 22
Firewall manager                : iptables
Gateway address                 : X.X.X.X
Host name for web application   : Host-HE1
Host ID                          : 1
Image size GB                   : 25
Storage connection              :
storage.example.com:/hosted_engine/nfs
Console type                    : vnc
Memory size MB                  : 4096
MAC address                     : 00:16:3e:77:b2:a4
Boot type                       : pxe
Number of CPUs                  : 2
CPU Type                        : model_Penryn

Please confirm installation settings (Yes, No)[No]:
```

7. Creating HostedEngine-VM

The script creates the virtual machine to be configured as HostedEngine-VM and provides connection details. You must install an operating system on HostedEngine-VM before the **hosted-engine** script can proceed on Host-HE1.

```
[ INFO ] Stage: Transaction setup
...
[ INFO ] Creating VM
You can now connect to the VM with the following command:
/usr/bin/remote-viewer vnc://localhost:5900
Use temporary password "5379skAb" to connect to vnc console.
Please note that in order to use remote-viewer you need to be able
to run graphical applications.
This means that if you are using ssh you have to supply the -Y flag
(enables trusted X11 forwarding).
Otherwise you can run the command from a terminal in your preferred
desktop environment.
If you cannot run graphical applications you can connect to the
graphic console from another host or connect to the console using
the following command:
virsh -c qemu+tls://Test/system console HostedEngine
If you need to reboot the VM you will need to start it manually
using the command:
```

```
hosted-engine --vm-start
```

You can then set a temporary password using the command:

```
hosted-engine --add-console-password
```

The VM has been started. Install the OS and shut down or reboot it.

To continue please make a selection:

- ```
(1) Continue setup - VM installation is complete
(2) Reboot the VM and restart installation
(3) Abort setup
(4) Destroy VM and abort setup
```

```
(1, 2, 3, 4)[1]:
```

Connect to the virtual machine using the VNC protocol with the following command. Replace FQDN with the fully qualified domain name or the IP address of the self-hosted engine host.

```
/usr/bin/remote-viewer vnc://FQDN:5900
```

### 8. Installing the Virtual Machine Operating System

Connect to HostedEngine-VM, the virtual machine created by the `hosted-engine` script, and install a Red Hat Enterprise Linux 6.7 operating system.

### 9. Synchronizing the Host and the Virtual Machine

Return to Host-HE1 and continue the `hosted-engine` deployment script by selecting option 1:

```
(1) Continue setup - VM installation is complete
```

### 10. Installing the Manager

Connect to HostedEngine-VM, and subscribe to the appropriate Red Hat Enterprise Virtualization Manager repositories. See [Subscribing to the Required Entitlements](#) in the *Installation Guide*.

Ensure that the most up-to-date versions of all installed packages are in use, and install the `rhev` packages.

```
yum update
```

```
yum install rhvm
```

### 11. Disabling BareMetal-Manager

Connect to BareMetal-Manager, the Manager of your established Red Hat Enterprise Virtualization environment, and stop the engine and prevent it from running.

```
service ovirt-engine stop
chkconfig ovirt-engine off
```



#### NOTE

Though stopping BareMetal-Manager from running is not obligatory, it is recommended as it ensures no changes will be made to the environment after the backup has been created. Additionally, it prevents BareMetal-Manager and HostedEngine-VM from simultaneously managing existing resources.



## 12. Updating DNS

Update your DNS so that the FQDN of the Red Hat Enterprise Virtualization environment correlates to the IP address of HostedEngine-VM and the FQDN previously provided when configuring the **hosted-engine** deployment script on Host-HE1. In this procedure, FQDN was set as *manager.example.com* because in a migrated hosted-engine setup, the FQDN provided for the engine must be identical to that given in the engine setup of the original engine.

## 13. Creating a Backup of BareMetal-Manager

- a. Ensure that the management network (**ovirtmgmt**) is configured as a VM network prior to performing the backup. For more information on configuring networks, see [Explanation of Settings and Controls in the New Logical Network and Edit Logical Network Windows](#) in the *Administration Guide*.
- b. Connect to BareMetal-Manager and run the **engine-backup** command with the **--mode=backup**, **--file=FILE**, and **--log=LogFILE** parameters to specify the backup mode, the name of the backup file created and used for the backup, and the name of the log file to be created to store the backup log.

```
engine-backup --mode=backup --file=FILE --log=LogFILE
```

## 14. Copying the Backup File to HostedEngine-VM

On BareMetal-Manager, secure copy the backup file to HostedEngine-VM. In the following example, *[manager.example.com]* is the FQDN for HostedEngine-VM, and */backup/* is any designated folder or path. If the designated folder or path does not exist, you must connect to HostedEngine-VM and create it before secure copying the backup from BareMetal-Manager.

```
scp -p FILE LogFILE manager.example.com:/backup/
```

## 15. Restoring the Backup File on HostedEngine-VM

Use the **engine-backup** tool to restore a complete backup. If you configured the BareMetal-Manager database(s) manually during **engine-setup**, follow the instructions at [Section 7.2.3, “Restoring the Self-Hosted Engine Manager Manually”](#) to restore the backup environment manually.

- o If you are only restoring the Manager, run:

```
engine-backup --mode=restore --file=file_name --
log=log_file_name --provision-db --restore-permissions
```

- o If you are restoring the Manager, Reports, and Data Warehouse, run:

```
engine-backup --mode=restore --file=file_name --
log=log_file_name --provision-db --provision-dwh-db --provision-
reports-db --restore-permissions
```

If successful, the following output displays:

```
You should now run engine-setup.
Done.
```

## 16. Configuring HostedEngine-VM

Configure the restored Manager virtual machine. This process identifies the existing configuration settings and database content. Confirm the settings. Upon completion, the setup provides an SSH fingerprint and an internal Certificate Authority hash.

```
engine-setup
```

```
[INFO] Stage: Initializing
[INFO] Stage: Environment setup
Configuration files: ['/etc/ovirt-engine-setup.conf.d/10-
packaging.conf', '/etc/ovirt-engine-setup.conf.d/20-setup-ovirt-
post.conf']
Log file: /var/log/ovirt-engine/setup/ovirt-engine-setup-
20140304075238.log
Version: otopi-1.1.2 (otopi-1.1.2-1.el6ev)
[INFO] Stage: Environment packages setup
[INFO] Yum Downloading: rhel-65-zstream/primary_db 2.8 M(70%)
[INFO] Stage: Programs detection
[INFO] Stage: Environment setup
[INFO] Stage: Environment customization

 ---== PACKAGES ===--

[INFO] Checking for product updates...
[INFO] No product updates found

 ---== NETWORK CONFIGURATION ===--

Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
[INFO] iptables will be configured as firewall manager.

 ---== DATABASE CONFIGURATION ===--

 ---== OVIRT ENGINE CONFIGURATION ===--

 ---== PKI CONFIGURATION ===--

 ---== APACHE CONFIGURATION ===--

 ---== SYSTEM CONFIGURATION ===--

 ---== END OF CONFIGURATION ===--

[INFO] Stage: Setup validation
[INFO] Cleaning stale zombie tasks

 ---== CONFIGURATION PREVIEW ===--

Default SAN wipe after delete : False
```

```

Firewall manager : iptables
Update Firewall : True
Host FQDN :
manager.example.com
Engine database secured connection : False
Engine database host : X.X.X.X
Engine database user name : engine
Engine database name : engine
Engine database port : 5432
Engine database host name validation : False
Engine installation : True
PKI organization : example.com
NFS mount point :
/var/lib/exports/iso
Configure VMConsole Proxy : True
Engine Host FQDN :
manager.example.com
Configure WebSocket Proxy : True

Please confirm installation settings (OK, Cancel) [OK]:

```

### 17. Synchronizing the Host and the Manager

Return to Host-HE1 and continue the **hosted-engine** deployment script by selecting option 1:

```
(1) Continue setup - engine installation is complete
```

```

[INFO] Engine replied: DB Up!Welcome to Health Status!
[INFO] Waiting for the host to become operational in the engine.
This may take several minutes...
[INFO] Still waiting for VDSM host to become operational...
[INFO] The VDSM Host is now operational
 Please shutdown the VM allowing the system to launch it as
a monitored service.
 The system will wait until the VM is down.

```

### 18. Shutting Down HostedEngine-VM

Shutdown HostedEngine-VM.

```
shutdown -h now
```

### 19. Setup Confirmation

Return to Host-HE1 to confirm it has detected that HostedEngine-VM is down.

```

[INFO] Enabling and starting HA services
 Hosted Engine successfully set up
[INFO] Stage: Clean up
[INFO] Stage: Pre-termination
[INFO] Stage: Termination

```

Your Red Hat Enterprise Virtualization engine has been migrated to a hosted-engine setup. The Manager is now operating on a virtual machine on Host-HE1, called HostedEngine-VM in the environment. As HostedEngine-VM is highly available, it is migrated to other hosts in the environment when applicable.

## 5.2. MIGRATING TO A SELF-HOSTED ENVIRONMENT USING THE RHEV-M VIRTUAL APPLIANCE

To migrate an existing instance of a standard Red Hat Enterprise Virtualization to a self-hosted engine environment, use the **hosted-engine** script to assist with the task. The script asks you a series of questions, and configures your environment based on your answers. The Manager from the standard Red Hat Enterprise Virtualization environment is referred to as the BareMetal-Manager in the following procedure.

The RHEV-M Virtual Appliance shortens the process by reducing the required user interaction with the Manager virtual machine. However, although the appliance can automate **engine-setup** in a standard installation, in the migration process **engine-setup** must be run manually so that you can restore the BareMetal-Manager backup file on the new Manager virtual machine beforehand.

The migration involves the following key actions:

- Run the **hosted-engine** script to configure the host to be used as a self-hosted engine host and to create a new Red Hat Enterprise Virtualization virtual machine.
- Back up the the engine database and configuration files using the **engine-backup** tool, copy the backup to the new Manager virtual machine, and restore the backup using the `--mode=restore` parameter of **engine-backup**. Run **engine-setup** to complete the Manager virtual machine configuration.
- Follow the **hosted-engine** script to complete the setup.

### Prerequisites

- Prepare a new hypervisor host with the `ovirt-hosted-engine-setup` package installed. See [Chapter 3, Deploying Self-Hosted Engine on a Red Hat Enterprise Linux Host](#) for more information on subscriptions and package installation. The host must be a supported version of the current Red Hat Enterprise Virtualization environment.



### NOTE

If you intend to use an existing host, place the host in maintenance and remove it from the existing environment. See [Removing a Host](#) in the *Administration Guide* for more information.

- Prepare storage for your self-hosted engine environment. The self-hosted engine requires a shared storage domain dedicated to the Manager virtual machine. This domain is created during deployment, and must be at least 60 GB. For more information on preparing storage for your deployment, see the [Storage](#) chapter of the *Administration Guide*.
- Obtain the RHEV-M Virtual Appliance by installing the `rhev-m-appliance` package. The RHEV-M Virtual Appliance is always based on the latest supported Manager version. Ensure the Manager version in your current environment is updated to the latest supported Y-stream version as the Manager version needs to be the same for the migration.
- To use the RHEV-M Virtual Appliance for the Manager installation, ensure one directory is at least 60 GB. The **hosted-engine** script first checks if `/var/tmp` has enough space to extract the appliance files. If not, you can specify a different directory.

- The fully qualified domain name of the new Manager must be the same fully qualified domain name as that of the BareMetal-Manager. Forward and reverse lookup records must both be set in DNS.
- You must have access and can make changes to the BareMetal-Manager.

## Procedure 5.2. Migrating to a Self-Hosted Environment using the RHEV-M Virtual Appliance

### 1. Initiating a Self-Hosted Engine Deployment

Run the **hosted-engine** script. To escape the script at any time, use the **CTRL+D** keyboard combination to abort deployment. It is recommended to use the **screen** window manager to run the script to avoid losing the session in case of network or terminal disruption. If not already installed, install the **screen** package, which is available in the standard Red Hat Enterprise Linux repository.

```
yum install screen

screen

hosted-engine --deploy
```



#### NOTE

In the event of session timeout or connection disruption, run **screen -d -r** to recover the **hosted-engine** deployment session.

### 2. Configuring Storage

Select the type of storage to use.

```
During customization use CTRL-D to abort.
Please specify the storage you would like to use (glusterfs, iscsi,
fc, nfs3, nfs4)[nfs3]:
```

- For NFS storage types, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.

```
Please specify the full shared storage connection path to use
(example: host:/path): storage.example.com:/hosted_engine/nfs
```

- For iSCSI, specify the iSCSI portal IP address, port, user name and password, and select a target name from the auto-detected list. You can only select one iSCSI target during the deployment.

```
Please specify the iSCSI portal IP address:
Please specify the iSCSI portal port [3260]:
Please specify the iSCSI portal user:
Please specify the iSCSI portal password:
Please specify the target name (auto-detected values) [default]:
```

- For Gluster storage, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.



## IMPORTANT

Only replica 3 Gluster storage is supported. Ensure the following configuration has been made:

- In the `/etc/glusterfs/glusterd.vol` file on all three Gluster servers, set `rpc-auth-allow-insecure` to `on`.

```
option rpc-auth-allow-insecure on
```

- Configure the volume as follows:

```
gluster volume set volume cluster.quorum-type auto
gluster volume set volume network.ping-timeout 10
gluster volume set volume auth.allow *
gluster volume set volume group virt
gluster volume set volume storage.owner-uid 36
gluster volume set volume storage.owner-gid 36
gluster volume set volume server.allow-insecure on
```

Please specify the full shared storage connection path to use (example: `host:/path`):  
`storage.example.com:/hosted_engine/gluster_volume`

- For Fibre Channel, the host bus adapters must be configured and connected, and the **hosted-engine** script will auto-detect the LUNs available. The LUNs must not contain any existing data.

```
The following luns have been found on the requested target:
[1] 3514f0c5447600351 30GiB XtremIO XtremApp
 status: used, paths: 2 active

[2] 3514f0c5447600352 30GiB XtremIO XtremApp
 status: used, paths: 2 active
```

Please select the destination LUN (1, 2) [1]:

### 3. Configuring the Network

The script detects possible network interface controllers (NICs) to use as a management bridge for the environment. It then checks your firewall configuration and offers to modify it for console (SPICE or VNC) access HostedEngine-VM. Provide a pingable gateway IP address, to be used by the **ovirt-ha-agent** to help determine a host's suitability for running HostedEngine-VM.

```
Please indicate a nic to set rhevm bridge on: (eth1, eth0) [eth1]:
iptables was detected on your computer, do you wish setup to
configure it? (Yes, No)[Yes]:
Please indicate a pingable gateway IP address [X.X.X.X]:
```

### 4. Configuring the Virtual Machine

The script creates a virtual machine to be configured as the Red Hat Enterprise Virtualization Manager, referred to in this procedure as HostedEngine-VM. Select **disk** for the boot device type, and the script will automatically detect the RHEV-M Appliances available. Select an

appliance.

```

Please specify the device to boot the VM from (choose disk
for the oVirt engine appliance) (cdrom, disk, pxe) [disk]:
[INFO] Detecting available oVirt engine appliances
The following appliance have been found on your system:
[1] - The RHEV-M Appliance image (OVA)
[2] - Directly select an OVA file
Please select an appliance (1, 2) [1]:
[INFO] Verifying its sha1sum
[INFO] Checking OVF archive content (could take a few minutes
depending on archive size)

```

Specify **Yes** if you want cloud-init to take care of the initial configuration of the Manager virtual machine. Specify **Generate** for cloud-init to take care of tasks like setting the root password, configuring networking, and configuring the host name. Optionally, select **Existing** if you have an existing cloud-init script to take care of more sophisticated functions of cloud-init. Specify the FQDN for the Manager virtual machine. This must be the same FQDN provided for the BareMetal-Manager.



#### NOTE

For more information on cloud-init, see <https://cloudinit.readthedocs.org/en/latest/>.

```

Would you like to use cloud-init to customize the appliance on the
first boot (Yes, No)[Yes]? Yes
Would you like to generate on-fly a cloud-init no-cloud ISO image or
do you have an existing one(Generate, Existing)[Generate]? Generate
Please provide the FQDN you would like to use for the engine
appliance.
Note: This will be the FQDN of the engine VM you are now going to
launch.
It should not point to the base host or to any other existing
machine.
Engine VM FQDN: (leave it empty to skip): manager.example.com

```

You must answer **No** to the following question so that you can restore the BareMetal-Manager backup file on HostedEngine-VM before running **engine-setup**.

```

Automatically execute engine-setup on the engine appliance on first
boot (Yes, No)[Yes]? No

```

Configure the Manager domain name, root password, networking, hardware, and console access details.

```

Please provide the domain name you would like to use for the engine
appliance.
Engine VM domain: [example.com]
Enter root password that will be used for the engine appliance
(leave it empty to skip): p@ssw0rd
Confirm appliance root password: p@ssw0rd
How should the engine VM network be configured (DHCP, Static)[DHCP]?
Static

```

```

Please enter the IP address to be used for the engine VM:
192.168.x.x
Please provide a comma-separated list (max3) of IP addresses of
domain name servers for the engine VM
Engine VM DNS (leave it empty to skip):
Add lines for the appliance itself and for this host to /etc/hosts
on the engine VM?
Note: ensuring that this host could resolve the engine VM hostname
is still up to you (Yes, No)[No] Yes
The following CPU types are supported by this host:
- model_SandyBridge: Intel SandyBridge Family
- model_Westmere: Intel Westmere Family
- model_Nehalem: Intel Nehalem Family
- model_Penryn: Intel Penryn Family
- model_Conroe: Intel Conroe Family
Please specify the CPU type to be used by the VM
[model_SandyBridge]:
Please specify the number of virtual CPUs for the VM [Defaults to
appliance OVF value: 2]:
You may specify a unicast MAC address for the VM or accept a
randomly generated default [00:16:3e:77:b2:a4]:
Please specify the memory size of the VM in MB [Defaults to
appliance OVF value: 4096]:
Please specify the console type you would like to use to connect to
the VM (vnc, spice) [vnc]: vnc

```

## 5. Configuring the Self-Hosted Engine

Specify the name for Host-HE1 to be identified in the Red Hat Enterprise Virtualization environment, and the password for the **admin@internal** user to access the Administration Portal. Finally, provide the name and TCP port number of the SMTP server, the email address used to send email notifications, and a comma-separated list of email addresses to receive these notifications.

```

Enter the name which will be used to identify this host inside the
Administrator Portal [hosted_engine_1]: Host-HE1
Enter 'admin@internal' user password that will be used for accessing
the Administrator Portal:
Confirm 'admin@internal' user password:
Please provide the name of the SMTP server through which we will
send notifications [localhost]:
Please provide the TCP port number of the SMTP server [25]:
Please provide the email address from which notifications will be
sent [root@localhost]:
Please provide a comma-separated list of email addresses which will
get notifications [root@localhost]:

```

## 6. Configuration Preview

Before proceeding, the **hosted-engine** script displays the configuration values you have entered, and prompts for confirmation to proceed with these values.

```

Bridge interface : eth1
Engine FQDN : manager.example.com
Bridge name : ovirtmgmt
Host address : host.example.com
SSH daemon port : 22

```



```

Firewall manager : iptables
Gateway address : X.X.X.X
Host name for web application : Host-HE1
Host ID : 1
Image size GB : 50
Storage connection :
storage.example.com:/hosted_engine/nfs
Console type : vnc
Memory size MB : 4096
MAC address : 00:16:3e:77:b2:a4
Boot type : pxe
Number of CPUs : 2
CPU Type : model_SandyBridge

Please confirm installation settings (Yes, No)[Yes]:

```

## 7. Creating HostedEngine-VM

The script creates the virtual machine to be configured as HostedEngine-VM and provides connection details. You must manually run **engine-setup** after restoring the backup file on HostedEngine-VM before the **hosted-engine** script can proceed on Host-HE1.

```

[INFO] Stage: Transaction setup
...
[INFO] Creating VM
 You can now connect to the VM with the following command:
 /bin/remote-viewer vnc://localhost:5900
 Use temporary password "3463VnKn" to connect to vnc
console.
 Please note that in order to use remote-viewer you need to
be able to run graphical applications.
 This means that if you are using ssh you have to supply
the -Y flag (enables trusted X11 forwarding).
 Otherwise you can run the command from a terminal in your
preferred desktop environment.
 If you cannot run graphical applications you can connect
to the graphic console from another host or connect to the serial
console using the following command:
 socat UNIX-CONNECT:/var/run/ovirt-vmconsole-
console/8f74b589-8c6f-4a32-9adf-6e615b69de07.sock,user=ovirt-
vmconsole STDIO,raw,echo=0,escape=1
 Please ensure that your Guest OS is properly configured to
support serial console according to your distro documentation.
 Follow
http://www.ovirt.org/Serial_Console_Setup#I_need_to_access_the_console_the_old_way
for more info.
 If you need to reboot the VM you will need to start it
manually using the command:
 hosted-engine --vm-start
 You can then set a temporary password using the command:
 hosted-engine --add-console-password
 Please install and setup the engine in the VM.
 You may also be interested in subscribing to "agent"
RHN/Satellite channel and installing rhvm-guest-agent-common
package in the VM.

```

```
The VM has been rebooted.
To continue please install oVirt-Engine in the VM
(Follow http://www.ovirt.org/Quick_Start_Guide for more
info).
```

```
Make a selection from the options below:
(1) Continue setup - oVirt-Engine installation is ready
and ovirt-engine service is up
(2) Abort setup
(3) Power off and restart the VM
(4) Destroy VM and abort setup

(1, 2, 3, 4)[1]:
```

Connect to the virtual machine using the VNC protocol with the following command. Replace FQDN with the fully qualified domain name or the IP address of the self-hosted engine host.

```
/bin/remote-viewer vnc://FQDN:5900
```

### 8. Enabling SSH on HostedEngine-VM

SSH password authentication is not enabled by default on the RHEV-M Virtual Appliance. Connect to HostedEngine-VM via VNC and enable SSH password authentication so that you can access the virtual machine via SSH later to restore the BareMetal-Manager backup file and configure the new Manager. Verify that the **sshd** service is running. Edit **/etc/ssh/sshd\_config** and change the following two options to **yes**:

```
[...]
PermitRootLogin yes
[...]
PasswordAuthentication yes
```

Restart the **sshd** service for the changes to take effect.

```
service sshd restart
```

### 9. Disabling BareMetal-Manager

Connect to BareMetal-Manager, the Manager of your established Red Hat Enterprise Virtualization environment, and stop the engine and prevent it from running.

```
service ovirt-engine stop
chkconfig ovirt-engine off
```



#### NOTE

Though stopping BareMetal-Manager from running is not obligatory, it is recommended as it ensures no changes will be made to the environment after the backup has been created. Additionally, it prevents BareMetal-Manager and HostedEngine-VM from simultaneously managing existing resources.

### 10. Updating DNS

Update your DNS so that the FQDN of the Red Hat Enterprise Virtualization environment correlates to the IP address of HostedEngine-VM and the FQDN previously provided when configuring the **hosted-engine** deployment script on Host-HE1. In this procedure, FQDN was

set as *manager.example.com* because in a migrated hosted-engine setup, the FQDN provided for the engine must be identical to that given in the engine setup of the original engine.

### 11. Creating a Backup of BareMetal-Manager

Connect to BareMetal-Manager and run the **engine-backup** command with the **--mode=backup**, **--file=FILE**, and **--log=LogFile** parameters to specify the backup mode, the name of the backup file created and used for the backup, and the name of the log file to be created to store the backup log.

```
engine-backup --mode=backup --file=FILE --log=LogFile
```

### 12. Copying the Backup File to HostedEngine-VM

On BareMetal-Manager, secure copy the backup file to HostedEngine-VM. In the following example, *manager.example.com* is the FQDN for HostedEngine-VM, and */backup/* is any designated folder or path. If the designated folder or path does not exist, you must connect to HostedEngine-VM and create it before secure copying the backup from BareMetal-Manager.

```
scp -p FILE LogFILE manager.example.com:/backup/
```

### 13. Restoring the Backup File on HostedEngine-VM

Use the **engine-backup** tool to restore a complete backup. If you configured the BareMetal-Manager database(s) manually during **engine-setup**, follow the instructions at [Section 7.2.3, “Restoring the Self-Hosted Engine Manager Manually”](#) to restore the backup environment manually.

- o If you are only restoring the Manager, run:

```
engine-backup --mode=restore --file=file_name --
log=log_file_name --provision-db --restore-permissions
```

- o If you are restoring the Manager, Reports, and Data Warehouse, run:

```
engine-backup --mode=restore --file=file_name --
log=log_file_name --provision-db --provision-dwh-db --provision-
reports-db --restore-permissions
```

If successful, the following output displays:

```
You should now run engine-setup.
Done.
```

### 14. Configuring HostedEngine-VM

Configure the restored Manager virtual machine. This process identifies the existing configuration settings and database content. Confirm the settings. Upon completion, the setup provides an SSH fingerprint and an internal Certificate Authority hash.

```
engine-setup
```

```
[INFO] Stage: Initializing
[INFO] Stage: Environment setup
Configuration files: ['/etc/ovirt-engine-setup.conf.d/10-
packaging.conf', '/etc/ovirt-engine-setup.conf.d/20-setup-ovirt-
```

```

post.conf']
Log file: /var/log/ovirt-engine/setup/ovirt-engine-setup-
20140304075238.log
Version: otopi-1.1.2 (otopi-1.1.2-1.el6ev)
[INFO] Stage: Environment packages setup
[INFO] Yum Downloading: rhel-65-zstream/primary_db 2.8 M(70%)
[INFO] Stage: Programs detection
[INFO] Stage: Environment setup
[INFO] Stage: Environment customization

 --== PACKAGES ==--

[INFO] Checking for product updates...
[INFO] No product updates found

 --== NETWORK CONFIGURATION ==--

Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
[INFO] iptables will be configured as firewall manager.

 --== DATABASE CONFIGURATION ==--

 --== OVIRT ENGINE CONFIGURATION ==--

 --== PKI CONFIGURATION ==--

 --== APACHE CONFIGURATION ==--

 --== SYSTEM CONFIGURATION ==--

 --== END OF CONFIGURATION ==--

[INFO] Stage: Setup validation
[INFO] Cleaning stale zombie tasks

 --== CONFIGURATION PREVIEW ==--

Default SAN wipe after delete : False
Firewall manager : iptables
Update Firewall : True
Host FQDN :
manager.example.com
Engine database secured connection : False
Engine database host : X.X.X.X
Engine database user name : engine
Engine database name : engine
Engine database port : 5432
Engine database host name validation : False

```

```

Engine installation : True
PKI organization : example.com
NFS mount point :
/var/lib/exports/iso
Configure VMConsole Proxy : True
Engine Host FQDN :
manager.example.com
Configure WebSocket Proxy : True

Please confirm installation settings (OK, Cancel) [OK]:

```

## 15. Synchronizing the Host and the Manager

Return to Host-HE1 and continue the **hosted-engine** deployment script by selecting option 1:

```
(1) Continue setup - oVirt-Engine installation is ready and ovirt-engine service is up
```

The script displays the internal Certificate Authority hash, and prompts you to select the cluster to which to add Host-HE1.

```

[INFO] Engine replied: DB Up!Welcome to Health Status!
[INFO] Acquiring internal CA cert from the engine
[INFO] The following CA certificate is going to be used, please
immediately interrupt if not correct:
[INFO] Issuer: C=US, O=example.com, CN=manager.example.com.23240,
Subject: C=US, O=example.com, CN=manager.example.com.23240,
Fingerprint (SHA-1): XX
[INFO] Connecting to the Engine
Enter the name of the cluster to which you want to add the
host (DB1, DB2, Default) [Default]:
[INFO] Waiting for the host to become operational in the engine.
This may take several minutes...
[INFO] The VDSM Host is now operational
[INFO] Saving hosted-engine configuration on the shared storage
domain
Please shutdown the VM allowing the system to launch it as
a monitored service.
The system will wait until the VM is down.

```

## 16. Shutting Down HostedEngine-VM

Shut down HostedEngine-VM.

```
shutdown -h now
```

## 17. Setup Confirmation

Return to Host-HE1 to confirm it has detected that HostedEngine-VM is down.

```

[INFO] Enabling and starting HA services
[INFO] Stage: Clean up
[INFO] Generating answer file '/var/lib/ovirt-hosted-engine-
setup/answers/answers-20160509162843.conf'
[INFO] Generating answer file '/etc/ovirt-hosted-
engine/answers.conf'

```

```
[INFO] Stage: Pre-termination
[INFO] Stage: Termination
[INFO] Hosted Engine successfully set up
```

Your Red Hat Enterprise Virtualization engine has been migrated to a self-hosted engine setup. The Manager is now operating on a virtual machine on Host-HE1, called HostedEngine-VM in the environment. As HostedEngine-VM is highly available, it is migrated to other hosts in the environment when applicable.

## CHAPTER 6. MAINTENANCE AND UPGRADING RESOURCES

### 6.1. MAINTAINING THE SELF-HOSTED ENGINE

The maintenance modes enable you to start, stop, and modify the engine virtual machine without interference from the high-availability agents, and to restart and modify the hosts in the environment without interfering with the engine.

There are three maintenance modes that can be enforced:

- **global** - All high-availability agents in the cluster are disabled from monitoring the state of the engine virtual machine. The global maintenance mode must be applied for any setup or upgrade operations that require the engine to be stopped. Examples of this include upgrading to a later version of Red Hat Enterprise Virtualization, and installation of the `rhev-dwh` and `rhev-reports` packages necessary for the **Reports Portal**.
- **local** - The high-availability agent on the host issuing the command is disabled from monitoring the state of the engine virtual machine. The host is exempt from hosting the engine virtual machine while in local maintenance mode; if hosting the engine virtual machine when placed into this mode, the engine will be migrated to another host, provided there is a suitable contender. The local maintenance mode is recommended when applying system changes or updates to the host.
- **none** - Disables maintenance mode, ensuring that the high-availability agents are operating.

#### Procedure 6.1. Maintaining a RHEL-Based Self-Hosted Engine (Local Maintenance)

1. Place a self-hosted engine host into the local maintenance mode:
  - In the Administration Portal, place the host into maintenance, and the local maintenance mode is automatically triggered for that host.
  - You can also set the maintenance mode from the command line:

```
hosted-engine --set-maintenance --mode=local
```

2. After you have completed any maintenance tasks, disable the maintenance mode:

```
hosted-engine --set-maintenance --mode=none
```

#### Procedure 6.2. Maintaining a RHEL-Based Self-Hosted Engine (Global Maintenance)

1. Place a self-hosted engine host into the global maintenance mode:
  - In the Administration Portal, right-click the engine virtual machine, and select **Enable Global HA Maintenance**.
  - You can also set the maintenance mode from the command line:

```
hosted-engine --set-maintenance --mode=global
```

2. After you have completed any maintenance tasks, disable the maintenance mode:

```
hosted-engine --set-maintenance --mode=none
```

### Procedure 6.3. Maintaining a RHEV-H-Based Self-Hosted Engine

1. In the text user interface, select the **Hosted Engine** screen.
2. Select **< Set Hosted Engine maintenance >**, and select a maintenance mode, either **Local** or **Global**.
3. After you have completed any maintenance tasks, disable the maintenance mode. Select **< Set Hosted Engine maintenance >**, and select **None**.

## 6.2. UPGRADING A RHEL OR RHEV-H 7 SELF-HOSTED ENGINE ENVIRONMENT



### NOTE

The following procedure is only for upgrading a Red Hat Enterprise Virtualization 3.5 self-hosted engine environment running on Red Hat Enterprise Linux (RHEL) 7 hosts or Red Hat Enterprise Virtualization Hypervisor (RHEV-H) 7 hosts.

New RHEL 7 hosts cannot be used in Red Hat Enterprise Virtualization 3.5 self-hosted engine environments; use the appropriate RHEV-H 7 host instead. See <https://access.redhat.com/solutions/2456071>.

To upgrade your Red Hat Enterprise Virtualization self-hosted engine environment from version 3.5 to 3.6, update the Manager virtual machine, the self-hosted engine hosts, and any standard hosts. All hosts in a self-hosted engine environment must be the same version; you cannot upgrade only some of the hosts.



### IMPORTANT

During the 3.5 to 3.6 upgrade, at least one self-hosted engine host must be upgraded first. Upgrading the host will trigger the self-hosted engine storage domain upgrade. A new 3.6 host will not trigger the required upgrade.

The self-hosted engine storage domain auto-import will happen automatically after a 3.5 host is upgraded with 3.6 packages.

The upgrade process involves the following key steps:

- Place the high-availability agents that manage the Manager virtual machine in the global maintenance mode.
- Update the Manager virtual machine.
- Place a self-hosted engine host into maintenance. The Manager virtual machine and other virtual machines will be migrated to another host in the cluster if necessary.
- Update the self-hosted engine host. Repeat for all hosts. It is recommended to update all hosts in the environment, including standard hosts.



- After all hosts in the cluster and the Manager virtual machine have been updated, change the cluster compatibility version to 3.6.

#### Procedure 6.4. Upgrading the Self-Hosted Engine Manager Virtual Machine

1. Disable the high-availability agents on all the self-hosted engine hosts. To do this run the following command on any self-hosted engine host in the cluster.

```
hosted-engine --set-maintenance --mode=global
```

After a few minutes, run **hosted-engine --vm-status** to confirm that the environment is in maintenance mode.

2. Log in to the Manager virtual machine to upgrade the Red Hat Enterprise Virtualization Manager.
  - a. Enable the Red Hat Enterprise Virtualization Manager 3.6 repository:

```
subscription-manager repos --enable=rhel-6-server-rhev-3.6-rpms
```

- b. Update the rhvm setup packages:

```
yum update rhvm*setup*
```

- c. Run **engine-setup** and follow the prompts to upgrade the Red Hat Enterprise Virtualization Manager:

```
engine-setup
```

- d. Remove or disable the Red Hat Enterprise Virtualization Manager 3.5 repository to ensure the system does not use any Red Hat Enterprise Virtualization Manager 3.5 packages:

```
subscription-manager repos --disable=rhel-6-server-rhev-3.5-rpms
```

- e. Update the base operating system:

```
yum update
```

Now that the Manager virtual machine has been upgraded, you can update the hosts. The following procedure is for updating Red Hat Enterprise Virtualisation Hypervisor 7 hosts.

#### Procedure 6.5. Updating the RHEV-H Self-Hosted Engine Host

1. Update the RHEV-H host. See [Updating Red Hat Enterprise Virtualization Hypervisors](#) in the *Upgrade Guide* for more information.
2. On the host, restart VDSM:

```
systemctl restart vdsmd
```

3. Restart **ovirt-ha-broker** and **ovirt-ha-agent**:

```
systemctl restart ovirt-ha-broker
```

```
systemctl restart ovirt-ha-agent
```

4. Repeat step 1 to step 3 to update all self-hosted engine hosts. If you have any standard RHEV-H hosts you can update them using step 1.
5. Disable global maintenance after all self-hosted engine hosts have been updated.

```
hosted-engine --set-maintenance --mode=none
```

The following procedure is for updating Red Hat Enterprise Linux 7-based hosts.

### Procedure 6.6. Updating the RHEL-Based Self-Hosted Engine Host

1. Access the Administration Portal. Select a self-hosted engine host and place it into maintenance mode by clicking **Maintenance**. If the host is hosting the Manager virtual machine, the virtual machine will be migrated to another host. Any other virtual machines will be migrated according to your virtual machine migration policy. The high-availability agents are automatically placed into local maintenance.
2. Update the self-hosted engine host:

```
yum update
```

3. Restart VDSM:

```
systemctl restart vdsmd
```

4. Restart **ovirt-ha-broker** and **ovirt-ha-agent**:

```
systemctl restart ovirt-ha-broker
```

```
systemctl restart ovirt-ha-agent
```

5. Access the Administration Portal. Select the same host and click **Activate**.
6. Repeat step 1 to step 5 to update all self-hosted engine hosts. If you have standard Red Hat Enterprise Linux 7 hosts in your environment, ensure the required repository is enabled on the host as in step 2, and update the host. See [Updating Red Hat Enterprise Linux Virtualization Hosts](#) in the *Upgrade Guide* for more information.
7. Disable global maintenance after all self-hosted engine hosts have been updated.

```
hosted-engine --set-maintenance --mode=none
```

It is recommended that all hosts in your self-hosted environment are upgraded at the same time. This prevents the older version hosts from going into a **Non Operational** state. If this is not possible in your environment, follow this procedure to upgrade any additional hosts.

### Procedure 6.7. Upgrading Additional Hosts

1. Access the Administration Portal. Select the host and place it into maintenance mode by clicking **Maintenance**. If the host is hosting the Manager virtual machine, the virtual machine will be migrated to another host. Any other virtual machines will be migrated according to your virtual machine migration policy. The high-availability agents are automatically placed into local maintenance.

2. Ensure the required repository is enabled:

```
subscription-manager repos --enable=rhel-7-server-rhev-mgmt-agent-rpms
```

3. Update the self-hosted engine host:

```
yum update
```

4. Restart VDSM:

```
service vdsmd restart
```

5. Restart **ovirt-ha-broker** and **ovirt-ha-agent**:

```
service ovirt-ha-broker restart
```

```
service ovirt-ha-agent restart
```

6. Access the Administration Portal. Select the host and activate it by clicking **Activate**.

7. Repeat the steps for all self-hosted engine hosts you want to upgrade.

You can now update the cluster compatibility version to 3.6.



### IMPORTANT

Only update the compatibility version if all hosts have been updated for Red Hat Enterprise Virtualization 3.6 to avoid some hosts becoming non-operational.

#### Procedure 6.8. Updating the Cluster Compatibility Version

1. Access the Administration Portal. Select the **Default** cluster and click **Edit** to open the **Edit Cluster** window.
2. Use the **Compatibility Version** drop-down menu to select **3.6**. Click **OK** to save the change and close the window.

## 6.3. UPGRADING A RHEL OR RHEV-H 6 SELF-HOSTED ENGINE ENVIRONMENT

This section describes how to upgrade a Red Hat Enterprise Virtualization 3.5 self-hosted engine environment, running on Red Hat Enterprise Linux (RHEL) 6 or Red Hat Enterprise Virtualization Hypervisor (RHEV-H) 6 hosts, to Red Hat Enterprise Virtualization 3.6, running on Next Generation Red Hat Virtualization Host (RHVH) or RHEL 7 hosts.

The upgrade procedure comprises the following key steps:

1. Upgrade the Manager
2. Upgrade the hosts
3. Perform post-upgrade tasks

This procedure describes how to upgrade the Manager from 3.5 to 3.6. This procedure assumes that the system on which the Manager is installed is subscribed to the entitlements for receiving Red Hat Enterprise Virtualization 3.5 packages at the start of the procedure.



### IMPORTANT

If the upgrade fails, the **engine-setup** command will attempt to roll back the Manager installation to its previous state. For this reason, the repositories required by Red Hat Enterprise Virtualization 3.5 must not be removed until after the upgrade is complete. If the upgrade fails, detailed instructions display that explain how to restore your installation.

### Procedure 6.9. Upgrading the Manager

1. Enable global maintenance from one of the self-hosted engine hosts:

```
hosted-engine --set-maintenance --mode=global
```

2. On the Manager virtual machine, subscribe to the required entitlements for receiving the Manager 3.6 packages:

```
subscription-manager repos --enable=rhel-6-server-rhev-3.6-rpms
```

3. Update the rhvm setup packages:

```
yum update rhvm*setup*
```

4. Run the following command and follow the prompts to upgrade the Manager:

```
engine-setup --otopi-
environment=OVESETUP_DB/forceUpgradeWithHeEl6Hosts=bool:True
```

5. Remove or disable the Manager 3.5 repository to ensure the system does not use any Manager 3.5 packages:

```
subscription-manager repos --disable=rhel-6-server-rhev-3.5-rpms
```

After upgrading the Manager, you can upgrade the hosts.

These procedures describe how to upgrade the hosts to Next Generation RHVH or RHEL 7, using the **host-direct-upgrade** tool.

### host-direct-upgrade Tool

The **host-direct-upgrade** tool provides a simple and fast way to upgrade a Red Hat Enterprise Virtualization 3.5 self-hosted engine environment, running on RHEV-H 6 or RHEL 6, to a Red Hat

Enterprise Virtualization 3.6 self-hosted engine environment, running on Next Generation RHVH or RHEL 7. The tool has two main functions:

- Importing configuration

The tool imports the configuration files (**answers.conf**, **hosted-engine.conf**, **vm.conf**, **broker.conf**) from the host on which the self-hosted engine was first deployed to the Manager virtual machine for later export to upgraded hosts. All files must be present on the host in order for the import to succeed. During this operation, the **ovirt-engine** service may be restarted to allow clusters with mixed hosts (different RHEL versions).

- Exporting configuration and configuring hosts

The tool configures an upgraded host with the configuration files that were imported to the Manager virtual machine. This operation can only be performed after the configuration file import operation.

This procedure describes how to upgrade the host on which the self-hosted engine was originally deployed.

### Procedure 6.10. Upgrading the Self-Hosted Engine Host

1. In the Administration Portal, click the **Hosts** tab, select the host on which the self-hosted engine was originally deployed, click **Maintenance**, and click **OK**. The host's virtual machines, including the Manager, will migrate to other hosts.
2. Connect to the Manager virtual machine and run the **host-direct-upgrade** tool to import the configuration files:

```
/usr/share/ovirt-engine/bin/host-direct-upgrade.sh --import-configuration-files [-h 3.5-host-address]
```



#### NOTE

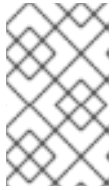
If you do not specify the optional **-h 3.5-host-address** parameter, you will be prompted to input the 3.5 host's IP address or FQDN later.

The **host-direct-upgrade** tool checks whether the self-hosted engine is configured to allow mixed RHEL versions in the same cluster. If not, the **ovirt-engine** service is restarted.

3. In the Administration Portal, click the **Clusters** tab and select the cluster.
4. Click **Edit**.
5. In the **Scheduling Policy** tab, select **InClusterUpgrade** from the **Policy** drop-down list and click **OK**.
6. Download [Next Generation RHVH \(for RHEV-M 3.6.11 Async\)](#) or [RHEL 7](#).
7. Install the newer operating system on the host, keeping the same IP address and host name. See [Installing Red Hat Virtualization Host](#) in the *Installation Guide* to install Next Generation RHVH or the [Red Hat Enterprise Linux Installation Guide](#) to install RHEL 7.

- Connect to the Manager virtual machine and run the **host-direct-upgrade** tool to export the configuration files:

```
/usr/share/ovirt-engine/bin/host-direct-upgrade.sh --export-and-configure [-h 3.6-host-address]
```



#### NOTE

The *3.6-host-address* is the IP address or FQDN of the host that you upgraded.

This process may take 10 to 15 minutes.

- Check the host's status:

```
hosted-engine --vm-status
```

The **Score** should be **2800**:

```
!! Cluster is in GLOBAL MAINTENANCE mode !!

--== Host 1 status ==--

conf_on_shared_storage : False
Status up-to-date : True
Hostname : rhvhhe20170926h1.localdomain
Host ID : 1
Engine status : "reason": "vm not running on
this host", "health": "bad", "vm": "down", "detail": "unknown"
Score : 2800
stopped : False
Local maintenance : False
crc32 : ffe0a244
local_conf_timestamp : 0
Host timestamp : 1375
```

- In the Administration Portal, click the **Hosts** tab and select the 3.5 host (still in maintenance mode).
- Click **Remove** and **OK**.
- Click **New** and add the upgraded host. Its status should be **Up**.
- Migrate the Manager virtual machine manually to the upgraded host. See [Manually Migrating Virtual Machines](#) in the *Virtual Machine Management Guide* for details.

After upgrading the Manager, check that the Manager's SPM ID matches the Host ID of each host.

#### Procedure 6.11. Comparing the Manager's SPM ID to the Host IDs

- Connect to the Manager virtual machine and run the following command to output the SPM ID:

```
sudo -u postgres psql engine -c "SELECT vds_spm_id, vds.vds_name
FROM vds"
```

2. Connect to each host and run the following command to output the Host ID:

```
grep "^host_id" /etc/ovirt-hosted-engine/hosted-engine.conf
```

3. If a host's Host ID does not match the Manager's SPM ID:
  - a. In the Administration Portal, click the **Hosts** tab, select the host with the mismatched Host ID, click **Maintenance**, and click **OK**.
  - b. Connect to the host and correct the **host\_id** value in the **/etc/ovirt-hosted-engine/hosted-engine.conf** file.
  - c. Reboot the host.
  - d. In the Administration Portal, click the **Hosts** tab and select the host.
  - e. Click **Activate** and **OK**.

This procedure describes how to upgrade the remaining hosts. You must perform this procedure on each host.

### Procedure 6.12. Upgrading the Remaining Hosts

1. In the Administration Portal, click the **Hosts** tab, select another host, and click **Maintenance**.

The host's virtual machines will migrate to other machines, preferring hosts with newer operating systems, because of the **InClusterUpgrade** policy. If the virtual machines do not migrate automatically, migrate them manually. See [Manually Migrating Virtual Machines](#) in the *Virtual Machine Management Guide* for details.

2. When the host has no virtual machines, click **Remove**.
3. Install Next Generation RHVH or RHEL 7 on the host, keeping its IP address and host name.
4. In the Administration Portal, click the **Hosts** tab and click **Add** to add the upgraded host.



#### NOTE

The upgraded host is added manually, before the **hosted-engine** setup, in order to preserve its Host ID.

5. Connect to the host, disable NetworkManager, and enable the network script:

```
systemctl stop NetworkManager; systemctl disable NetworkManager;
systemctl start network; systemctl enable network
```

6. Install the **screen** utility if necessary:

```
yum install screen
```

7. Run the **hosted-engine** setup in a **screen** session:

```
hosted-engine --deploy
```

```
[INFO] Stage: Initializing
[INFO] Generating a temporary VNC password.
[INFO] Stage: Environment setup
Continuing will configure this host for serving as
hypervisor and create a VM where you have to install the engine
afterwards.
Are you sure you want to continue? (Yes, No)[Yes]:
Configuration files: []
Log file: /var/log/ovirt-hosted-engine-setup/ovirt-hosted-
engine-setup.log
Version: otopi-1.4.2 (otopi-1.4.2-1.el7ev)
[INFO] Hardware supports virtualization
[INFO] Stage: Environment packages setup
[INFO] Stage: Programs detection
[INFO] Stage: Environment setup
[INFO] Stage: Environment customization

--== STORAGE CONFIGURATION ==--

During customization use CTRL-D to abort.
Please specify the storage you would like to use
(glusterfs, iscsi, fc, nfs3, nfs4)[nfs3]: nfs4
Please specify the full shared storage connection path to
use (example: host:/path): hostname:/path
The specified storage location already contains a data
domain. Is this an additional host setup (Yes, No)[Yes]?
[INFO] Installing on additional host
Please specify the Host ID [Must be integer, default: 2]:

--== SYSTEM CONFIGURATION ==--

[WARNING] A configuration file must be supplied to deploy Hosted
Engine on an additional host.
[INFO] Answer file successfully loaded

--== NETWORK CONFIGURATION ==--

[INFO] Bridge rhevm already created
[INFO] Additional host deployment, firewall manager is 'iptables'
The following CPU types are supported by this host:
- model_SandyBridge: Intel SandyBridge Family
- model_Westmere: Intel Westmere Family
- model_Nehalem: Intel Nehalem Family
- model_Penryn: Intel Penryn Family
- model_Conroe: Intel Conroe Family

--== HOSTED ENGINE CONFIGURATION ==--

Enter the name which will be used to identify this host
inside the Administrator Portal [hosted_engine_2]:
Enter 'admin@internal' user password that will be used for
accessing the Administrator Portal:
Confirm 'admin@internal' user password:
[INFO] Stage: Setup validation
Please provide the address of this host.
```



Note: The engine VM and all the other hosts should be able to correctly resolve it.

Host address: [rhvh.example.com]:

The Host ID is already known. Is this a re-deployment on an additional host that was previously set up (Yes, No)[Yes]?

--== CONFIGURATION PREVIEW ==--

```

Engine FQDN :
enginevm.localdomain
 Bridge name : rhevm
 Host address : rhvh.example.com
 SSH daemon port : 22
 Firewall manager : iptables
 Gateway address : 192.168.1.1
 Host name for web application : hosted_engine_2
 Storage Domain type : nfs4
 Host ID : 2
 Image size GB : 50
 GlusterFS Share Name :
hosted_engine_glusterfs
 GlusterFS Brick Provisioning : False
 Storage connection : hostname:/path
 Console type : vnc
 Memory size MB : 4096
 MAC address : 00:16:3e:12:96:6b
 Boot type : disk
 Number of CPUs : 1
 CPU Type : model_SandyBridge

```

```

[INFO] Stage: Transaction setup
[INFO] Stage: Misc configuration
[INFO] Stage: Package installation
[INFO] Stage: Misc configuration
[INFO] Configuring libvirt
[INFO] Configuring VDSM
[INFO] Starting vdsmd
[INFO] Waiting for VDSM hardware info
[INFO] Configuring VM
[INFO] Updating hosted-engine configuration
[INFO] Stage: Transaction commit
[INFO] Stage: Closing up
[INFO] Acquiring internal CA cert from the engine
[INFO] The following CA certificate is going to be used, please
immediately interrupt if not correct:
[INFO] Issuer: C=US, O=localdomain,
CN=enginevm.localdomain.34970, Subject: C=US, O=localdomain,
CN=enginevm.localdomain.34970, Fingerprint (SHA-1):
46A75DA2174D03B100D1811411C0C6627CB1D821
[INFO] Connecting to the Engine
[INFO] Waiting for the host to become operational in the engine.
This may take several minutes...

```

```

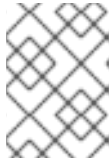
[INFO] Still waiting for VDSM host to become operational...
[INFO] The VDSM Host is now operational
[ERROR] Cannot automatically set CPU level of cluster Default:
inclusterupgrade is not a member of SchedulingPolicyType. Possible

```

```

values for SchedulingPolicyType are: evenly_distributed,
power_saving, none, vm_evenly_distributed
[INFO] Enabling and starting HA services
[INFO] Stage: Clean up
[INFO] Generating answer file '/var/lib/ovirt-hosted-engine-
setup/answers/answers-20170927190113.conf'
[INFO] Generating answer file '/etc/ovirt-hosted-
engine/answers.conf'
[INFO] Stage: Pre-termination
[INFO] Stage: Termination
[INFO] Hosted Engine successfully set up

```



## NOTE

You can ignore the [ **ERROR** ] **Cannot automatically set CPU level of cluster Default** message.

This procedure completes the upgrade.

### Procedure 6.13. Post-Upgrade Tasks

1. In the Administration Portal, click the **Cluster** tab and select the cluster.
2. Select **3.6** from the **Compatibility Version** drop-down list.
3. In the **Scheduling Policy** tab, select **None** from the **Policy** drop-down list and click **OK**.
4. Reboot each virtual machine (except the Manager virtual machine), one by one.
5. Connect to the Manager virtual machine and update its configuration:

```
engine-config -s CheckMixedRhelVersions=true --cver=3.5
```

6. In the Administration Portal, click the **Events** tab and confirm that the Manager virtual machine and its storage domain were imported successfully:

```

Sep 27, 2017 7:15:18 PM Hosted Engine VM was imported successfully
Sep 27, 2017 7:15:18 PM Starting to import Vm HostedEngine to Data
Center Default, Cluster Default
Sep 27, 2017 7:15:16 PM VM HostedEngine was successfully removed.
Sep 27, 2017 7:15:00 PM Hosted Engine storage domain imported
successfully
Sep 27, 2017 7:15:00 PM Storage Domain hosted_storage was attached
to Data Center Default by SYSTEM
Sep 27, 2017 7:15:00 PM Storage Domain hosted_storage (Data Center
Default) was activated by SYSTEM
Sep 27, 2017 7:14:57 PM The Hosted Engine Storage Domain isn't
Active.

```

7. In the **Virtual Machines** tab, select the Manager virtual machine, and click **Shutdown**.
8. Connect to a self-hosted engine host and disable global maintenance mode:

```
hosted-engine --set-maintenance --mode=none
```

Wait for the **ovirt-ha-agent** service to restart the Manager virtual machine.

9. Check the status of each host:

```
hosted-engine --vm-status
```

Each host should have a score of **3400**:

```
--== Host 1 status ==--

conf_on_shared_storage : False
Status up-to-date : True
Hostname : rhvhhe20170926h1.localdomain
Host ID : 1
Engine status : "health": "good", "vm": "up",
"detail": "up"
Score : 3400
stopped : False
Local maintenance : False
crc32 : 6a5a17a7
local_conf_timestamp : 7580
Host timestamp : 7579

--== Host 2 status ==--

conf_on_shared_storage : False
Status up-to-date : True
Hostname : rhvhhe20170926h2.localdomain
Host ID : 2
Engine status : "reason": "vm not running on
this host", "health": "bad", "vm": "down", "detail": "unknown"
Score : 3400
stopped : False
Local maintenance : False
crc32 : 1c87c83d
local_conf_timestamp : 4323
Host timestamp : 4323
```

## 6.4. REMOVING A HOST FROM A SELF-HOSTED ENGINE ENVIRONMENT

If you wish to remove a self-hosted engine host from your environment, you will need to place the host into maintenance, disable the HA services, and remove the self-hosted engine configuration file.

### Procedure 6.14. Removing a Host from a Self-Hosted Engine Environment

1. In the Administration Portal, click the **Hosts** tab. Select the host and click **Maintenance** to set the host to the local maintenance mode. This action stops the **ovirt-ha-agent** and **ovirt-ha-broker** services.

2. Log in to the host and disable the HA services so the services are not started upon a reboot:

```
systemctl disable ovirt-ha-agent
systemctl disable ovirt-ha-broker
```

3. Remove the self-hosted engine configuration file:

- o RHEL-based hypervisor:

```
rm /etc/ovirt-hosted-engine/hosted-engine.conf
```

- o RHEV-H:

```
unpersist /etc/ovirt-hosted-engine/hosted-engine.conf
rm /etc/ovirt-hosted-engine/hosted-engine.conf
```

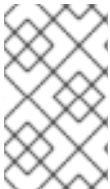
4. In the Administration Portal, select the same host, and click **Remove** to open the **Remove Host (s)** confirmation window. Click **OK**.

## CHAPTER 7. BACKING UP AND RESTORING A RHEL-BASED SELF-HOSTED ENVIRONMENT

The nature of the self-hosted engine, and the relationship between the hosts and the hosted-engine virtual machine, means that backing up and restoring a self-hosted engine environment requires additional considerations to that of a standard Red Hat Enterprise Virtualization environment. In particular, the hosted-engine hosts remain in the environment at the time of backup, which can result in a failure to synchronize the new host and hosted-engine virtual machine after the environment has been restored.

To address this, it is recommended that one of the hosts be placed into maintenance mode prior to backup, thereby freeing it from a virtual load. This failover host can then be used to deploy the new self-hosted engine.

If a hosted-engine host is carrying a virtual load at the time of backup, then a host with any of the matching identifiers - IP address, FQDN, or name - cannot be used to deploy a restored self-hosted engine. Conflicts in the database will prevent the host from synchronizing with the restored hosted-engine virtual machine. The failover host, however, can be removed from the restored hosted-engine virtual machine prior to synchronization.



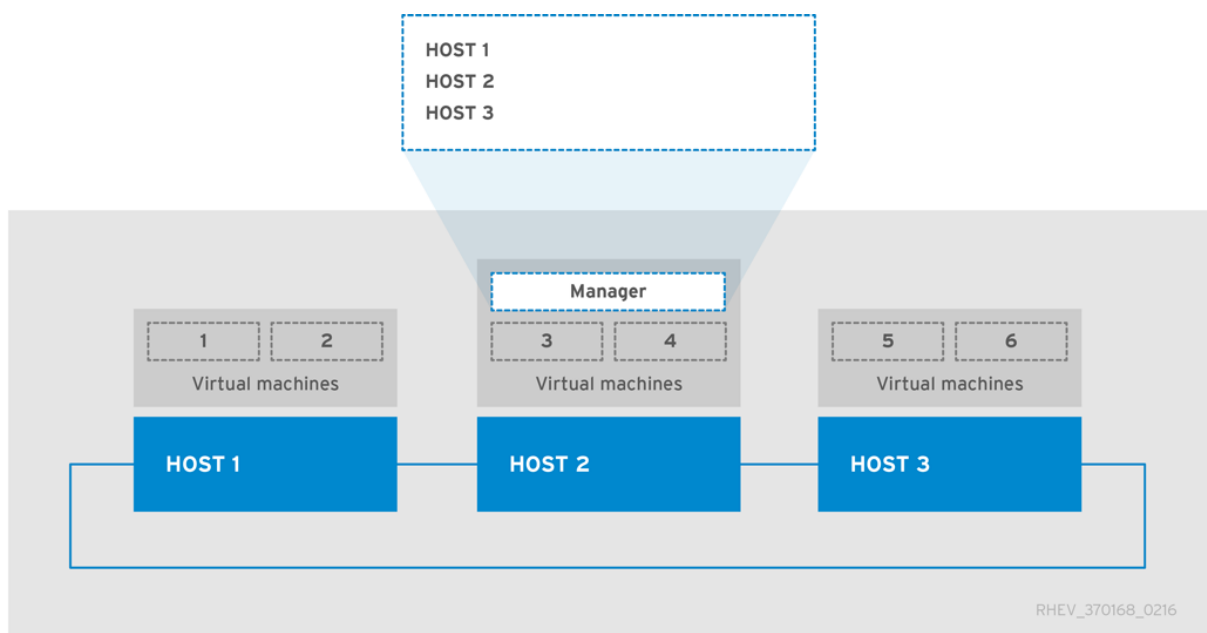
### NOTE

A failover host at the time of backup is not strictly necessary if a new host is used to deploy the self-hosted engine. The new host must have a unique IP address, FQDN, and name so that it does not conflict with any of the hosts present in the database backup.

### Procedure 7.1. Workflow for Backing Up the Self-Hosted Engine Environment

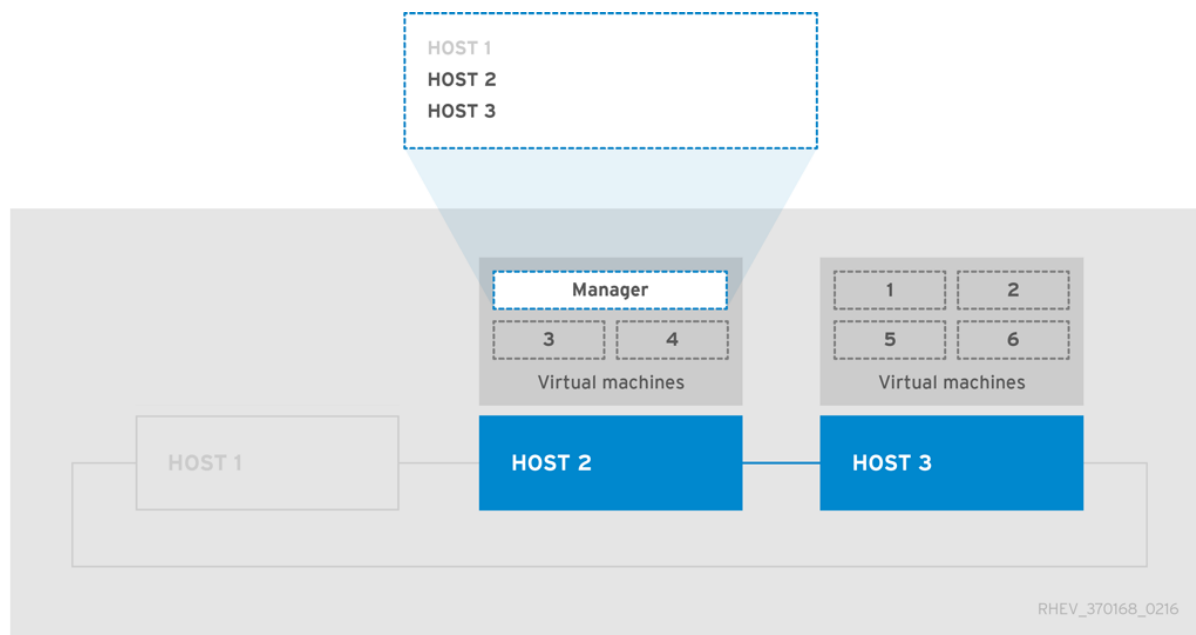
This procedure provides an example of the workflow for backing up a self-hosted engine using a failover host. This host can then be used later to deploy the restored self-hosted engine environment. For more information on backing up the self-hosted engine, see [Section 7.1, “Backing up the Self-Hosted Engine Manager Virtual Machine”](#).

1. The engine virtual machine is running on **Host 2** and the six regular virtual machines in the environment are balanced across the three hosts.



Place **Host 1** into maintenance mode. This will migrate the virtual machines on **Host 1** to the other hosts, freeing it of any virtual load and enabling it to be used as a failover host for the backup.

2. **Host 1** is in maintenance mode. The two virtual machines it previously hosted have been migrated to Host 3.

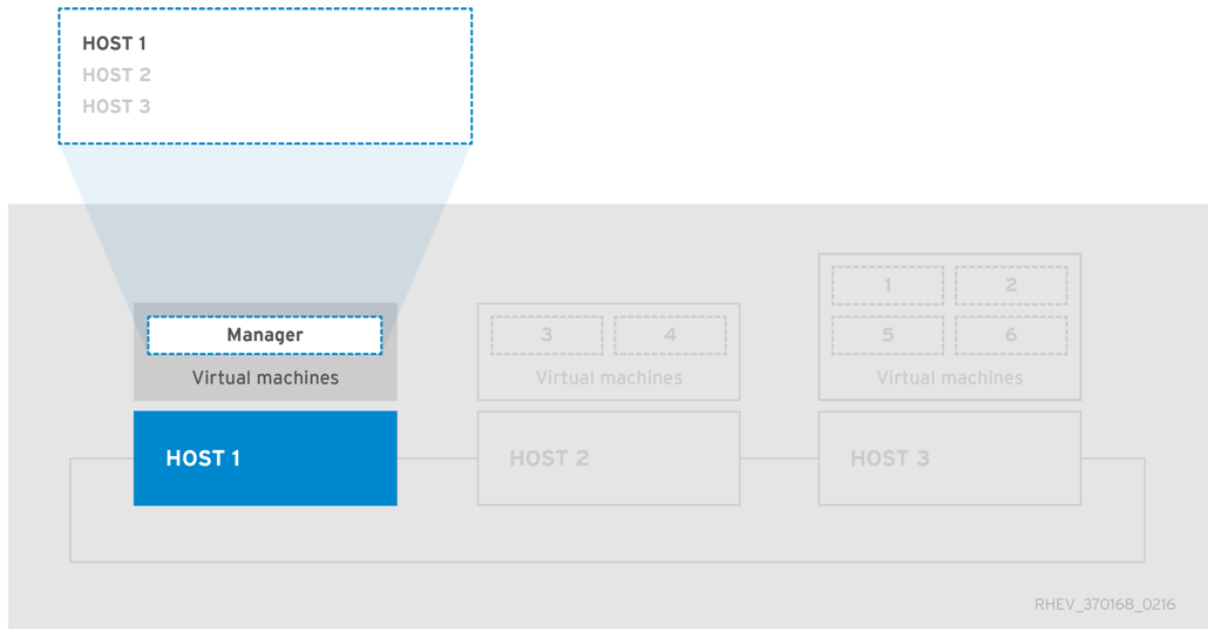


Use **engine-backup** to create backups of the environment. After the backup has been taken, **Host 1** can be activated again to host virtual machines, including the engine virtual machine.

## Procedure 7.2. Workflow for Restoring the Self-Hosted Engine Environment

This procedure provides an example of the workflow for restoring the self-hosted engine environment from a backup. The failover host deploys the new engine virtual machine, which then restores the backup. Directly after the backup has been restored, the failover host is still present in the Red Hat Enterprise Virtualization Manager because it was in the environment when the backup was created. Removing the old failover host from the Manager enables the new host to synchronize with the engine virtual machine and finalize deployment. For more information on restoring the self-hosted engine, see [Section 7.2, “Restoring the Self-Hosted Engine Environment”](#).

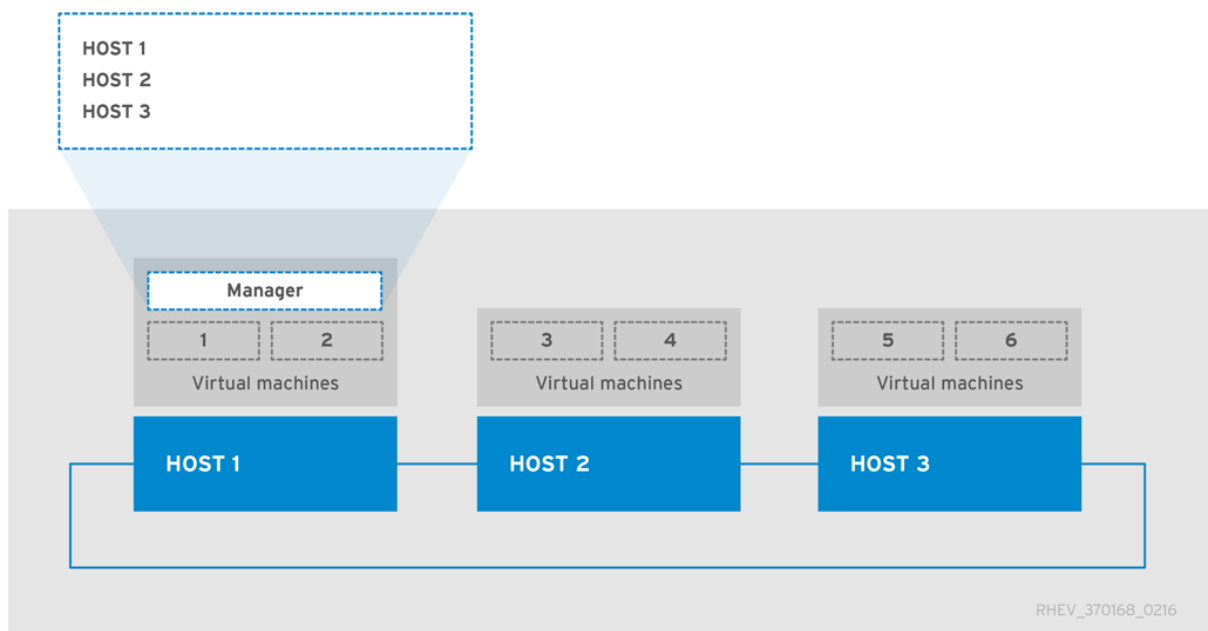
1. **Host 1** has been used to deploy a new self-hosted engine and has restored the backup taken in the previous example procedure. Deploying the restored environment involves additional steps to that of a regular self-hosted engine deployment:
  - o After Red Hat Enterprise Virtualization Manager has been installed on the engine virtual machine, but before **engine-setup** is first run, restore the backup using the **engine-backup** tool.
  - o After **engine-setup** has configured and restored the Manager, log in to the Administration Portal and remove **Host 1**, which will be present from the backup. If old **Host 1** is not removed, and is still present in the Manager when finalizing deployment on new **Host 1**, the engine virtual machine will not be able to synchronize with new **Host 1** and the deployment will fail.



After **Host 1** and the engine virtual machine have synchronized and the deployment has been finalized, the environment can be considered operational on a basic level. With only one hosted-engine host, the engine virtual machine is not highly available. However, if necessary, high-priority virtual machines can be started on **Host 1**.

Any standard RHEL-based hosts - hosts that are present in the environment but are not self-hosted engine hosts - that are operational will become active, and the virtual machines that were active at the time of backup will now be running on these hosts and available in the Manager.

2. **Host 2** and **Host 3** are not recoverable in their current state. These hosts need to be removed from the environment, and then added again to the environment using the hosted-engine deployment script. For more information on these actions, see [Section 7.2.4, “Removing Non-Operational Hosts from a Restored Self-Hosted Engine Environment”](#) and [Section 7.3, “Installing Additional Hosts to a Restored Self-Hosted Engine Environment”](#).



**Host 2** and **Host 3** have been re-deployed into the restored environment. The environment is now as it was in the first image, before the backup was taken, with the exception that the engine virtual machine is hosted on **Host 1**.

## 7.1. BACKING UP THE SELF-HOSTED ENGINE MANAGER VIRTUAL MACHINE

It is recommended that you back up your self-hosted engine environment regularly. The supported backup method uses the **engine-backup** tool and can be performed without interrupting the **ovirt-engine** service. The **engine-backup** tool only allows you to back up the Red Hat Enterprise Virtualization Manager virtual machine, but not the host that contains the Manager virtual machine or other virtual machines hosted in the environment.

### Procedure 7.3. Backing up the Original Red Hat Enterprise Virtualization Manager

#### 1. Preparing the Failover Host

A failover host, one of the hosted-engine hosts in the environment, must be placed into maintenance mode so that it has no virtual load at the time of the backup. This host can then later be used to deploy the restored self-hosted engine environment. Any of the hosted-engine hosts can be used as the failover host for this backup scenario, however the restore process is more straightforward if **Host 1** is used. The default name for the **Host 1** host is **hosted\_engine\_1**; this was set when the hosted-engine deployment script was initially run.

- a. Log in to one of the hosted-engine hosts.
- b. Confirm that the **hosted\_engine\_1** host is **Host 1**:

```
hosted-engine --vm-status
```

- c. Log in to the Administration Portal.
- d. Click the **Hosts** tab.
- e. Select the **hosted\_engine\_1** host in the results list, and click **Maintenance**.
- f. Click **Ok**.

Depending on the virtual load of the host, it may take some time for all the virtual machines to be migrated. Proceed to the next step after the host status has changed to **Maintenance**.

#### 2. Creating a Backup of the Manager

On the Manager virtual machine, back up the configuration settings and database content, replacing *[EngineBackupFile]* with the file name for the backup file, and *[LogFile]* with the file name for the backup log.

```
engine-backup --mode=backup --file=[EngineBackupFile] --log=[LogFile]
```

#### 3. Backing up the Files to an External Server

Back up the files to an external server. In the following example, *[Storage.example.com]* is the fully qualified domain name of a network storage server that will store the backup until it is needed, and */backup/* is any designated folder or path. The backup files must be accessible to restore the configuration settings and database content.

```
scp -p [EngineBackupFiles] [Storage.example.com:/backup/EngineBackupFiles]
```



#### 4. Activating the Failover Host

Bring the `hosted_engine_1` host out of maintenance mode.

- a. Log in to the Administration Portal.
- b. Click the **Hosts** tab.
- c. Select `hosted_engine_1` from the results list.
- d. Click **Activate**.

You have backed up the configuration settings and database content of the Red Hat Enterprise Virtualization Manager virtual machine.

## 7.2. RESTORING THE SELF-HOSTED ENGINE ENVIRONMENT

This section explains how to restore a self-hosted engine environment from a backup on a newly installed host. The supported restore method uses the `engine-backup` tool.

Restoring a self-hosted engine environment involves the following key actions:

1. Create a newly installed Red Hat Enterprise Linux host and run the hosted-engine deployment script.
2. Restore the Red Hat Enterprise Virtualization Manager configuration settings and database content in the new Manager virtual machine.
3. Remove hosted-engine hosts in a **Non Operational** state and re-install them into the restored self-hosted engine environment.

### Prerequisites

- To restore a self-hosted engine environment, you must prepare a newly installed Red Hat Enterprise Linux system on a physical host.
- The operating system version of the new host and Manager must be the same as that of the original host and Manager.
- You must have Red Hat Subscription Manager entitlements for your new environment. For a list of the required repositories, see [Subscribing to the Required Entitlements](#) in the *Installation Guide*.
- The fully qualified domain name of the new Manager must be the same fully qualified domain name as that of the original Manager. Forward and reverse lookup records must both be set in DNS.
- You must prepare storage for the new self-hosted engine environment to use as the Manager virtual machine's shared storage domain. This domain must be at least 60 GB. For more information on preparing storage for your deployment, see the [Storage](#) chapter of the *Administration Guide*.

### 7.2.1. Creating a New Self-Hosted Engine Environment to be Used as the Restored Environment

You can restore a self-hosted engine on hardware that was used in the backed-up environment.

However, you must use the failover host for the restored deployment. The failover host, **Host 1**, used in [Section 7.1, “Backing up the Self-Hosted Engine Manager Virtual Machine”](#) uses the default hostname of **hosted\_engine\_1** which is also used in this procedure. Due to the nature of the restore process for the self-hosted engine, before the final synchronization of the restored engine can take place, this failover host will need to be removed, and this can only be achieved if the host had no virtual load when the backup was taken. You can also restore the backup on a separate hardware which was not used in the backed up environment and this is not a concern.



## IMPORTANT

This procedure assumes that you have a freshly installed Red Hat Enterprise Linux system on a physical host, have subscribed the host to the required entitlements, and installed the `ovirt-hosted-engine-setup` package. See [Section 3.1, “Subscribing to the Required Entitlements”](#) and [Section 3.2, “Installing the Self-Hosted Engine Packages”](#) for more information.

### Procedure 7.4. Creating a New Self-Hosted Environment to be Used as the Restored Environment

#### 1. Updating DNS

Update your DNS so that the fully qualified domain name of the Red Hat Enterprise Virtualization environment correlates to the IP address of the new Manager. In this procedure, fully qualified domain name was set as *Manager.example.com*. The fully qualified domain name provided for the engine must be identical to that given in the engine setup of the original engine that was backed up.

#### 2. Initiating Hosted Engine Deployment

On the newly installed Red Hat Enterprise Linux host, run the **hosted-engine** deployment script. To escape the script at any time, use the **CTRL+D** keyboard combination to abort deployment. If running the **hosted-engine** deployment script over a network, it is recommended to use the **screen** window manager to avoid losing the session in case of network or terminal disruption. Install the `screen` package first if not installed.

```
screen
```

```
hosted-engine --deploy
```

#### 3. Preparing for Initialization

The script begins by requesting confirmation to use the host as a hypervisor for use in a self-hosted engine environment.

```
Continuing will configure this host for serving as hypervisor and
create a VM where you have to install oVirt Engine afterwards.
Are you sure you want to continue? (Yes, No)[Yes]:
```

#### 4. Configuring Storage

Select the type of storage to use.

```
During customization use CTRL-D to abort.
Please specify the storage you would like to use (glusterfs, iscsi,
fc, nfs3, nfs4)[nfs3]:
```

- For NFS storage types, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.

```
Please specify the full shared storage connection path to use
(example: host:/path): storage.example.com:/hosted_engine/nfs
```

- o For iSCSI, specify the iSCSI portal IP address, port, user name and password, and select a target name from the auto-detected list. You can only select one iSCSI target during the deployment.

```
Please specify the iSCSI portal IP address:
Please specify the iSCSI portal port [3260]:
Please specify the iSCSI portal user:
Please specify the iSCSI portal password:
Please specify the target name (auto-detected values) [default]:
```

- o For Gluster storage, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.

### IMPORTANT

Only replica 3 Gluster storage is supported. Ensure the following configuration has been made:

- In the `/etc/glusterfs/glusterd.vol` file on all three Gluster servers, set `rpc-auth-allow-insecure` to `on`.

```
option rpc-auth-allow-insecure on
```

- Configure the volume as follows:

```
gluster volume set volume cluster.quorum-type auto
gluster volume set volume network.ping-timeout 10
gluster volume set volume auth.allow *
gluster volume set volume group virt
gluster volume set volume storage.owner-uid 36
gluster volume set volume storage.owner-gid 36
gluster volume set volume server.allow-insecure on
```

```
Please specify the full shared storage connection path to use
(example: host:/path):
storage.example.com:/hosted_engine/gluster_volume
```

- o For Fibre Channel, the host bus adapters must be configured and connected, and the **hosted-engine** script will auto-detect the LUNs available. The LUNs must not contain any existing data.

```
The following luns have been found on the requested target:
[1] 3514f0c5447600351 30GiB XtremIO XtremApp
 status: used, paths: 2 active

[2] 3514f0c5447600352 30GiB XtremIO XtremApp
 status: used, paths: 2 active
```

```
Please select the destination LUN (1, 2) [1]:
```

Choose the storage domain and storage data center names to be used in the environment.

```
[INFO] Installing on first host
Please provide storage domain name. [hosted_storage]:
Local storage datacenter name is an internal name and currently will
not be shown in engine's admin UI.Please enter local datacenter name
[hosted_datacenter]:
```

## 5. Configuring the Network

The script detects possible network interface controllers (NICs) to use as a management bridge for the environment. It then checks your firewall configuration and offers to modify it for console (SPICE or VNC) access the Manager virtual machine. Provide a pingable gateway IP address, to be used by the **ovirt-ha-agent**, to help determine a host's suitability for running a Manager virtual machine.

```
Please indicate a nic to set rhevm bridge on: (eth1, eth0) [eth1]:
iptables was detected on your computer, do you wish setup to
configure it? (Yes, No)[Yes]:
Please indicate a pingable gateway IP address [X.X.X.X]:
```

## 6. Configuring the New Manager Virtual Machine

The script creates a virtual machine to be configured as the new Manager virtual machine. Specify the boot device and, if applicable, the path name of the installation media, the image alias, the CPU type, the number of virtual CPUs, and the disk size. Specify a MAC address for the Manager virtual machine, or accept a randomly generated one. The MAC address can be used to update your DHCP server prior to installing the operating system on the Manager virtual machine. Specify memory size and console connection type for the creation of Manager virtual machine.

```
Please specify the device to boot the VM from (cdrom, disk, pxe)
[cdrom]:
Please specify an alias for the Hosted Engine image [hosted_engine]:
The following CPU types are supported by this host:
 - model_Penryn: Intel Penryn Family
 - model_Conroe: Intel Conroe Family
Please specify the CPU type to be used by the VM [model_Penryn]:
Please specify the number of virtual CPUs for the VM [Defaults to
minimum requirement: 2]:
Please specify the disk size of the VM in GB [Defaults to minimum
requirement: 25]:
You may specify a MAC address for the VM or accept a randomly
generated default [00:16:3e:77:b2:a4]:
Please specify the memory size of the VM in MB [Defaults to minimum
requirement: 4096]:
Please specify the console type you want to use to connect to the VM
(vnc, spice) [vnc]:
```

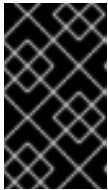
## 7. Identifying the Name of the Host

A unique name must be provided for the name of the host, to ensure that it does not conflict with other resources that will be present when the engine has been restored from the backup. The name **hosted\_engine\_1** can be used in this procedure because this host was placed into maintenance mode before the environment was backed up, enabling removal of this host between the restoring of the engine and the final synchronization of the host and the engine.

Enter the name which will be used to identify this host inside the Administration Portal [hosted\_engine\_1]:

## 8. Configuring the Hosted Engine

Specify a name for the self-hosted engine environment, and the password for the **admin@internal** user to access the Administration Portal. Provide the fully qualified domain name for the new Manager virtual machine. This procedure uses the fully qualified domain name *Manager.example.com*. Provide the name and TCP port number of the SMTP server, the email address used to send email notifications, and a comma-separated list of email addresses to receive these notifications.



### IMPORTANT

The fully qualified domain name provided for the engine (*Manager.example.com*) must be the same fully qualified domain name provided when original Manager was initially set up.

Enter 'admin@internal' user password that will be used for accessing the Administrator Portal:

Confirm 'admin@internal' user password:

Please provide the FQDN for the engine you would like to use.

This needs to match the FQDN that you will use for the engine installation within the VM.

Note: This will be the FQDN of the VM you are now going to create, it should not point to the base host or to any other existing machine.

Engine FQDN: *Manager.example.com*

Please provide the name of the SMTP server through which we will send notifications [localhost]:

Please provide the TCP port number of the SMTP server [25]:

Please provide the email address from which notifications will be sent [root@localhost]:

Please provide a comma-separated list of email addresses which will get notifications [root@localhost]:

## 9. Configuration Preview

Before proceeding, the **hosted-engine** deployment script displays the configuration values you have entered, and prompts for confirmation to proceed with these values.

```

Bridge interface : eth1
Engine FQDN : Manager.example.com
Bridge name : rhevm
SSH daemon port : 22
Firewall manager : iptables
Gateway address : X.X.X.X
Host name for web application : hosted_engine_1
Host ID : 1
Image alias : hosted_engine
Image size GB : 25
Storage connection :
storage.example.com:/hosted_engine/nfs
Console type : vnc
Memory size MB : 4096

```

```

MAC address : 00:16:3e:77:b2:a4
Boot type : pxe
Number of CPUs : 2
CPU Type : model_Penryn

```

Please confirm installation settings (Yes, No)[Yes]:

## 10. Creating the New Manager Virtual Machine

The script creates the virtual machine to be configured as the Manager virtual machine and provides connection details. You must install an operating system on it before the **hosted-engine** deployment script can proceed on Hosted Engine configuration.

```

[INFO] Stage: Transaction setup
[INFO] Stage: Misc configuration
[INFO] Stage: Package installation
[INFO] Stage: Misc configuration
[INFO] Configuring libvirt
[INFO] Configuring VDSM
[INFO] Starting vdsmd
[INFO] Waiting for VDSM hardware info
[INFO] Waiting for VDSM hardware info
[INFO] Configuring the management bridge
[INFO] Creating Storage Domain
[INFO] Creating Storage Pool
[INFO] Connecting Storage Pool
[INFO] Verifying sanlock lockspace initialization
[INFO] Creating VM Image
[INFO] Disconnecting Storage Pool
[INFO] Start monitoring domain
[INFO] Configuring VM
[INFO] Updating hosted-engine configuration
[INFO] Stage: Transaction commit
[INFO] Stage: Closing up
[INFO] Creating VM

```

You can now connect to the VM with the following command:

```
/usr/bin/remote-viewer vnc://localhost:5900
```

Use temporary password "3477XXAM" to connect to vnc console.

Please note that in order to use remote-viewer you need to be able to run graphical applications.

This means that if you are using ssh you have to supply the -Y flag (enables trusted X11 forwarding).

Otherwise you can run the command from a terminal in your preferred desktop environment.

If you cannot run graphical applications you can connect to the graphic console from another host or connect to the console using the following command:

```
virsh -c qemu+tls://Test/system console HostedEngine
```

If you need to reboot the VM you will need to start it manually using the command:

```
hosted-engine --vm-start
```

You can then set a temporary password using the command:

```
hosted-engine --add-console-password
```

The VM has been started. Install the OS and shut down or reboot it.

To continue please make a selection:

(1) Continue setup - VM installation is complete

- (2) Reboot the VM and restart installation
- (3) Abort setup
- (4) Destroy VM and abort setup

(1, 2, 3, 4)[1]:

Using the naming convention of this procedure, connect to the virtual machine using VNC with the following command:

```
/usr/bin/remote-viewer vnc://hosted_engine_1.example.com:5900
```

### 11. Installing the Virtual Machine Operating System

Connect to Manager virtual machine and install a Red Hat Enterprise Linux 6.7 operating system.

### 12. Synchronizing the Host and the Manager

Return to the host and continue the **hosted-engine** deployment script by selecting option 1:

- (1) Continue setup - VM installation is complete

Waiting for VM to shut down...

[ INFO ] Creating VM

You can now connect to the VM with the following command:

```
/usr/bin/remote-viewer vnc://localhost:5900
```

Use temporary password "3477XXAM" to connect to vnc console.

Please note that in order to use remote-viewer you need to be able to run graphical applications.

This means that if you are using ssh you have to supply the -Y flag (enables trusted X11 forwarding).

Otherwise you can run the command from a terminal in your preferred desktop environment.

If you cannot run graphical applications you can connect to the graphic console from another host or connect to the console using the following command:

```
virsh -c qemu+tls://Test/system console HostedEngine
```

If you need to reboot the VM you will need to start it manually using the command:

```
hosted-engine --vm-start
```

You can then set a temporary password using the command:

```
hosted-engine --add-console-password
```

Please install and setup the engine in the VM.

You may also be interested in subscribing to "agent" RHN/Satellite channel and installing rhvm-guest-agent-common package in the VM.

To continue make a selection from the options below:

- (1) Continue setup - engine installation is complete
- (2) Power off and restart the VM
- (3) Abort setup
- (4) Destroy VM and abort setup

(1, 2, 3, 4)[1]:

### 13. Installing the Manager

Connect to new Manager virtual machine, ensure the latest versions of all installed packages are in use, and install the rhvm packages.

```
yum update
```

```
yum install rhelm
```

#### 14. Install Reports and the Data Warehouse

If you are also restoring Reports and the Data Warehouse, install the `rhelm-reports-setup` and `rhelm-dwh-setup` packages.

```
yum install rhelm-reports-setup rhelm-dwh-setup
```

After the packages have completed installation, you will be able to continue with restoring the self-hosted engine Manager.

### 7.2.2. Restoring the Self-Hosted Engine Manager

The following procedure outlines how to use the `engine-backup` tool to automate the restore of the configuration settings and database content for a backed-up self-hosted engine Manager virtual machine, Reports, and Data Warehouse. The procedure only applies to components that were configured automatically during the initial `engine-setup`. If you configured the database(s) manually during `engine-setup`, follow the instructions at [Section 7.2.3, “Restoring the Self-Hosted Engine Manager Manually”](#) to restore the back-up environment manually.

#### Procedure 7.5. Restoring the Self-Hosted Engine Manager

1. Securely copy the backup files to the new Manager virtual machine. This example copies the files from a network storage server to which the files were copied in [Section 7.1, “Backing up the Self-Hosted Engine Manager Virtual Machine”](#). In this example, `Storage.example.com` is the fully qualified domain name of the storage server, `/backup/EngineBackupFiles` is the designated file path for the backup files on the storage server, and `/backup/` is the path to which the files will be copied on the new Manager.

```
scp -p Storage.example.com:/backup/EngineBackupFiles /backup/
```

2. Use the `engine-backup` tool to restore a complete backup.

- o If you are only restoring the Manager, run:

```
engine-backup --mode=restore --file=file_name --
log=log_file_name --provision-db --restore-permissions
```

- o If you are restoring the Manager, Reports, and Data Warehouse, run:

```
engine-backup --mode=restore --file=file_name --
log=log_file_name --provision-db --provision-dwh-db --provision-
reports-db --restore-permissions
```

If successful, the following output displays:

```
You should now run engine-setup.
Done.
```



3. Configure the restored Manager virtual machine. This process identifies the existing configuration settings and database content. Confirm the settings. Upon completion, the setup provides an SSH fingerprint and an internal Certificate Authority hash.

```
engine-setup
```

```
[INFO] Stage: Initializing
[INFO] Stage: Environment setup
Configuration files: ['/etc/ovirt-engine-setup.conf.d/10-
packaging.conf', '/etc/ovirt-engine-setup.conf.d/20-setup-ovirt-
post.conf']
Log file: /var/log/ovirt-engine/setup/ovirt-engine-setup-
20140304075238.log
Version: otopi-1.1.2 (otopi-1.1.2-1.el6ev)
[INFO] Stage: Environment packages setup
[INFO] Yum Downloading: rhel-65-zstream/primary_db 2.8 M(70%)
[INFO] Stage: Programs detection
[INFO] Stage: Environment setup
[INFO] Stage: Environment customization

--== PACKAGES ==--

[INFO] Checking for product updates...
[INFO] No product updates found

--== NETWORK CONFIGURATION ==--

Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
[INFO] iptables will be configured as firewall manager.

--== DATABASE CONFIGURATION ==--

--== OVIRT ENGINE CONFIGURATION ==--

Skipping storing options as database already prepared

--== PKI CONFIGURATION ==--

PKI is already configured

--== APACHE CONFIGURATION ==--

--== SYSTEM CONFIGURATION ==--

--== END OF CONFIGURATION ==--

[INFO] Stage: Setup validation
[INFO] Cleaning stale zombie tasks

--== CONFIGURATION PREVIEW ==--
```

```

Database name : engine
Database secured connection : False
Database host : X.X.X.X
Database user name : engine
Database host name validation : False
Database port : 5432
NFS setup : True
Firewall manager : iptables
Update Firewall : True
Configure WebSocket Proxy : True
Host FQDN : Manager.example.com
NFS mount point : /var/lib/exports/iso
Set application as default page : True
Configure Apache SSL : True

```

Please confirm installation settings (OK, Cancel) [OK]:

#### 4. Removing the Host from the Restored Environment

If the deployment of the restored self-hosted engine is on new hardware that has a unique name not present in the backed-up engine, skip this step. This step is only applicable to deployments occurring on the failover host, **hosted\_engine\_1**. Because this host was present in the environment at time the backup was created, it maintains a presence in the restored engine and must first be removed from the environment before final synchronization can take place.

- a. Log in to the Administration Portal.
- b. Click the **Hosts** tab. The failover host, **hosted\_engine\_1**, will be in maintenance mode and without a virtual load, as this was how it was prepared for the backup.
- c. Click **Remove**.
- d. Click **Ok**.



#### NOTE

If the host you are trying to remove becomes non-operational, see [Section 7.2.4, “Removing Non-Operational Hosts from a Restored Self-Hosted Engine Environment”](#) for instructions on how to force the removal of a host.

#### 5. Synchronizing the Host and the Manager

Return to the host and continue the **hosted-engine** deployment script by selecting option 1:

```
(1) Continue setup - engine installation is complete
```

```

[INFO] Engine replied: DB Up!Welcome to Health Status!
[INFO] Waiting for the host to become operational in the engine.
This may take several minutes...
[INFO] Still waiting for VDSM host to become operational...

```

At this point, **hosted\_engine\_1** will become visible in the Administration Portal with **Installing** and **Initializing** states before entering a **Non Operational** state. The host will continue to wait for the VDSM host to become operational until it eventually times out. This happens because another host in the environment maintains the Storage Pool Manager (SPM)

role and **hosted\_engine\_1** cannot interact with the storage domain because the SPM host is in a **Non Responsive** state. When this process times out, you are prompted to shut down the virtual machine to complete the deployment. When deployment is complete, the host can be manually placed into maintenance mode and activated through the Administration Portal.

```
[INFO] Still waiting for VDSM host to become operational...
[ERROR] Timed out while waiting for host to start. Please check
the logs.
[ERROR] Unable to add hosted_engine_2 to the manager
Please shutdown the VM allowing the system to launch it as
a monitored service.
The system will wait until the VM is down.
```

6. Shut down the new Manager virtual machine.

```
shutdown -h now
```

7. Return to the host to confirm it has detected that the Manager virtual machine is down.

```
[INFO] Enabling and starting HA services
Hosted Engine successfully set up
[INFO] Stage: Clean up
[INFO] Stage: Pre-termination
[INFO] Stage: Termination
```

8. Activate the host.

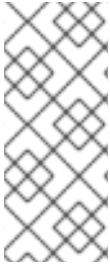
- a. Log in to the Administration Portal.
- b. Click the **Hosts** tab.
- c. Select **hosted\_engine\_1** and click the **Maintenance** button. The host may take several minutes before it enters maintenance mode.
- d. Click the **Activate** button.

Once active, **hosted\_engine\_1** immediately contends for SPM, and the storage domain and data center become active.

9. Migrate virtual machines to the active host by manually fencing the **Non Responsive** hosts. In the Administration Portal, right-click the hosts and select **Confirm 'Host has been Rebooted'**.

Any virtual machines that were running on that host at the time of the backup will now be removed from that host, and move from an **Unknown** state to a **Down** state. These virtual machines can now be run on **hosted\_engine\_1**. The host that was fenced can now be forcefully removed using the REST API.

The environment has now been restored to a point where **hosted\_engine\_1** is active and is able to run virtual machines in the restored environment. The remaining hosted-engine hosts in **Non Operational** state can now be removed and then re-installed into the environment.



## NOTE

If the Manager database is restored successfully, but the Manager virtual machine appears to be **Down** and cannot be migrated to another self-hosted engine host, you can enable a new Manager virtual machine and remove the dead Manager virtual machine from the environment by following the steps provided in <https://access.redhat.com/solutions/1517683>.

### 7.2.3. Restoring the Self-Hosted Engine Manager Manually

The following procedure outlines how to manually restore the configuration settings and database content for a backed-up self-hosted engine Manager virtual machine.

#### Procedure 7.6. Restoring the Self-Hosted Engine Manager

1. Manually create an empty database to which the database content in the backup can be restored. The following steps must be performed on the machine where the database is to be hosted.
  1. If the database is to be hosted on a machine other than the Manager virtual machine, install the `postgresql-server` package. This step is not required if the database is to be hosted on the Manager virtual machine because this package is included with the `rhev` package.

```
yum install postgresql-server
```

2. Initialize the `postgresql` database, start the `postgresql` service, and ensure this service starts on boot:

```
service postgresql initdb
service postgresql start
chkconfig postgresql on
```

3. Enter the `postgresql` command line:

```
su postgres
$ psql
```

4. Create the `engine` user:

```
postgres=# create role engine with login encrypted password
'password';
```

If you are also restoring the Reports and Data Warehouse, create the `ovirt_engine_reports` and `ovirt_engine_history` users on the relevant host:

```
postgres=# create role ovirt_engine_reports with login encrypted
password 'password';
```

```
postgres=# create role ovirt_engine_history with login encrypted
password 'password';
```

5. Create the new database:

```
postgres=# create database database_name owner engine template
template0 encoding 'UTF8' lc_collate 'en_US.UTF-8' lc_ctype
'en_US.UTF-8';
```

If you are also restoring the Reports and Data Warehouse, create the databases on the relevant host:

```
postgres=# create database database_name owner
ovirt_engine_reports template template0 encoding 'UTF8'
lc_collate 'en_US.UTF-8' lc_ctype 'en_US.UTF-8';
```

```
postgres=# create database database_name owner
ovirt_engine_history template template0 encoding 'UTF8'
lc_collate 'en_US.UTF-8' lc_ctype 'en_US.UTF-8';
```

6. Exit the postgresql command line and log out of the postgres user:

```
postgres=# \q
$ exit
```

7. Edit the `/var/lib/pgsql/data/pg_hba.conf` file as follows:

- For each local database, replace the existing directives in the section starting with **local** at the bottom of the file with the following directives:

```
host database_name user_name 0.0.0.0/0 md5
host database_name user_name ::0/0 md5
```

- For each remote database:

- Add the following line immediately underneath the line starting with **local** at the bottom of the file, replacing `X.X.X.X` with the IP address of the Manager:

```
host database_name user_name X.X.X.X/32 md5
```

- Allow TCP/IP connections to the database. Edit the `/var/lib/pgsql/data/postgresql.conf` file and add the following line:

```
listen_addresses='*'
```

This example configures the **postgresql** service to listen for connections on all interfaces. You can specify an interface by giving its IP address.

- Open the default port used for PostgreSQL database connections, and save the updated firewall rules:

```
iptables -I INPUT 5 -p tcp -s Manager_IP_Address --dport
5432 -j ACCEPT
service iptables save
```

8. Restart the **postgresql** service:

-

```
service postgresql restart
```

- Secure copy the backup files to the new Manager virtual machine. This example copies the files from a network storage server to which the files were copied in [Section 7.1, “Backing up the Self-Hosted Engine Manager Virtual Machine”](#). In this example, *Storage.example.com* is the fully qualified domain name of the storage server, */backup/EngineBackupFiles* is the designated file path for the backup files on the storage server, and */backup/* is the path to which the files will be copied on the new Manager.

```
scp -p Storage.example.com:/backup/EngineBackupFiles /backup/
```

- Restore a complete backup or a database-only backup with the **--change-db-credentials** parameter to pass the credentials of the new database. The *database\_location* for a database local to the Manager is **localhost**.



## NOTE

The following examples use a **--\*password** option for each database without specifying a password, which will prompt for a password for each database. Passwords can be supplied for these options in the command itself, however this is not recommended as the password will then be stored in the shell history. Alternatively, **--\*passfile=password\_file** options can be used for each database to securely pass the passwords to the **engine-backup** tool without the need for interactive prompts.

- Restore a complete backup:

```
engine-backup --mode=restore --file=file_name --
log=log_file_name --change-db-credentials --db-
host=database_location --db-name=database_name --db-user=engine -
-db-password
```

If Reports and Data Warehouse are also being restored as part of the complete backup, include the revised credentials for the two additional databases:

```
engine-backup --mode=restore --file=file_name --log=log_file_name
--change-db-credentials --db-host=database_location --db-
name=database_name --db-user=engine --db-password --change-
reports-db-credentials --reports-db-host=database_location --
reports-db-name=database_name --reports-db-
user=ovirt_engine_reports --reports-db-password --change-dwh-db-
credentials --dwh-db-host=database_location --dwh-db-
name=database_name --dwh-db-user=ovirt_engine_history --dwh-db-
password
```

- Restore a database-only backup restoring the configuration files and the database backup:

```
engine-backup --mode=restore --scope=files --scope=db --
file=file_name --log=file_name --change-db-credentials --db-
host=database_location --db-name=database_name --db-user=engine -
-db-password
```

The example above restores a backup of the Manager database.

```
engine-backup --mode=restore --scope=files --scope=reportsdb --
file=file_name --log=file_name --change-reports-db-credentials --
reports-db-host=database_location --reports-db-name=database_name
--reports-db-user=ovirt_engine_reports --reports-db-password
```

The example above restores a backup of the Reports database.

```
engine-backup --mode=restore --scope=files --scope=dwhdb --
file=file_name --log=file_name --change-dwh-db-credentials --dwh-
db-host=database_location --dwh-db-name=database_name --dwh-db-
user=ovirt_engine_history --dwh-db-password
```

The example above restores a backup of the Data Warehouse database.

If successful, the following output displays:

```
You should now run engine-setup.
Done.
```

4. Configure the restored Manager virtual machine. This process identifies the existing configuration settings and database content. Confirm the settings. Upon completion, the setup provides an SSH fingerprint and an internal Certificate Authority hash.

```
engine-setup
```

```
[INFO] Stage: Initializing
[INFO] Stage: Environment setup
Configuration files: ['/etc/ovirt-engine-setup.conf.d/10-
packaging.conf', '/etc/ovirt-engine-setup.conf.d/20-setup-ovirt-
post.conf']
Log file: /var/log/ovirt-engine/setup/ovirt-engine-setup-
20140304075238.log
Version: otopi-1.1.2 (otopi-1.1.2-1.el6ev)
[INFO] Stage: Environment packages setup
[INFO] Yum Downloading: rhel-65-zstream/primary_db 2.8 M(70%)
[INFO] Stage: Programs detection
[INFO] Stage: Environment setup
[INFO] Stage: Environment customization
```

```
--== PACKAGES ==--
```

```
[INFO] Checking for product updates...
[INFO] No product updates found
```

```
--== NETWORK CONFIGURATION ==--
```

Setup can automatically configure the firewall on this system.  
Note: automatic configuration of the firewall may overwrite current settings.

Do you want Setup to configure the firewall? (Yes, No) [Yes]:

```
[INFO] iptables will be configured as firewall manager.
```

```
--== DATABASE CONFIGURATION ==--
```

```

--== OVIRT ENGINE CONFIGURATION ==--

Skipping storing options as database already prepared

--== PKI CONFIGURATION ==--

PKI is already configured

--== APACHE CONFIGURATION ==--

--== SYSTEM CONFIGURATION ==--

--== END OF CONFIGURATION ==--

[INFO] Stage: Setup validation
[INFO] Cleaning stale zombie tasks

--== CONFIGURATION PREVIEW ==--

Database name : engine
Database secured connection : False
Database host : X.X.X.X
Database user name : engine
Database host name validation : False
Database port : 5432
NFS setup : True
Firewall manager : iptables
Update Firewall : True
Configure WebSocket Proxy : True
Host FQDN : Manager.example.com
NFS mount point : /var/lib/exports/iso
Set application as default page : True
Configure Apache SSL : True

Please confirm installation settings (OK, Cancel) [OK]:

```

## 5. Removing the Host from the Restored Environment

If the deployment of the restored self-hosted engine is on new hardware that has a unique name not present in the backed-up engine, skip this step. This step is only applicable to deployments occurring on the failover host, **hosted\_engine\_1**. Because this host was present in the environment at time the backup was created, it maintains a presence in the restored engine and must first be removed from the environment before final synchronization can take place.

- a. Log in to the Administration Portal.
- b. Click the **Hosts** tab. The failover host, **hosted\_engine\_1**, will be in maintenance mode and without a virtual load, as this was how it was prepared for the backup.
- c. Click **Remove**.
- d. Click **Ok**.

## 6. Synchronizing the Host and the Manager



Return to the host and continue the **hosted-engine** deployment script by selecting option 1:

```
(1) Continue setup - engine installation is complete
```

```
[INFO] Engine replied: DB Up!Welcome to Health Status!
[INFO] Waiting for the host to become operational in the engine.
This may take several minutes...
[INFO] Still waiting for VDSM host to become operational...
```

At this point, **hosted\_engine\_1** will become visible in the Administration Portal with **Installing** and **Initializing** states before entering a **Non Operational** state. The host will continue to wait for the VDSM host to become operational until it eventually times out. This happens because another host in the environment maintains the Storage Pool Manager (SPM) role and **hosted\_engine\_1** cannot interact with the storage domain because the SPM host is in a **Non Responsive** state. When this process times out, you are prompted to shut down the virtual machine to complete the deployment. When deployment is complete, the host can be manually placed into maintenance mode and activated through the Administration Portal.

```
[INFO] Still waiting for VDSM host to become operational...
[ERROR] Timed out while waiting for host to start. Please check
the logs.
[ERROR] Unable to add hosted_engine_2 to the manager
Please shutdown the VM allowing the system to launch it as
a monitored service.
The system will wait until the VM is down.
```

7. Shut down the new Manager virtual machine.

```
shutdown -h now
```

8. Return to the host to confirm it has detected that the Manager virtual machine is down.

```
[INFO] Enabling and starting HA services
Hosted Engine successfully set up
[INFO] Stage: Clean up
[INFO] Stage: Pre-termination
[INFO] Stage: Termination
```

9. Activate the host.

- a. Log in to the Administration Portal.
- b. Click the **Hosts** tab.
- c. Select **hosted\_engine\_1** and click the **Maintenance** button. The host may take several minutes before it enters maintenance mode.
- d. Click the **Activate** button.

Once active, **hosted\_engine\_1** immediately contends for SPM, and the storage domain and data center become active.

10. Migrate virtual machines to the active host by manually fencing the **Non Responsive** hosts. In the Administration Portal, right-click the hosts and select **Confirm 'Host has been Rebooted'**.

Any virtual machines that were running on that host at the time of the backup will now be removed from that host, and move from an **Unknown** state to a **Down** state. These virtual machines can now be run on **hosted\_engine\_1**. The host that was fenced can now be forcefully removed using the REST API.

The environment has now been restored to a point where **hosted\_engine\_1** is active and is able to run virtual machines in the restored environment. The remaining hosted-engine hosts in **Non Operational** state can now be removed and then re-installed into the environment.



## NOTE

If the Manager database is restored successfully, but the Manager virtual machine appears to be **Down** and cannot be migrated to another self-hosted engine host, you can enable a new Manager virtual machine and remove the dead Manager virtual machine from the environment by following the steps provided in <https://access.redhat.com/solutions/1517683>.

### 7.2.4. Removing Non-Operational Hosts from a Restored Self-Hosted Engine Environment

Once a host has been fenced in the Administration Portal, it can be forcefully removed with a REST API request. This procedure will use **cURL**, a command line interface for sending requests to HTTP servers. Most Linux distributions include **cURL**. This procedure will connect to the Manager virtual machine to perform the relevant requests.

#### 1. Fencing the Non-Operational Host

In the Administration Portal, right-click the hosts and select **Confirm 'Host has been Rebooted'**.

Any virtual machines that were running on that host at the time of the backup will now be removed from that host, and move from an **Unknown** state to a **Down** state. The host that was fenced can now be forcefully removed using the REST API.

#### 2. Retrieving the Manager Certificate Authority

Connect to the Manager virtual machine and use the command line to perform the following requests with **cURL**.

Use a **GET** request to retrieve the Manager Certificate Authority (CA) certificate for use in all future API requests. In the following example, the **--output** option is used to designate the file *hosted-engine.ca* as the output for the Manager CA certificate. The **--insecure** option means that this initial request will be without a certificate.

```
curl --output hosted-engine.ca --insecure
https://[Manager.example.com]/ca.crt
```

#### 3. Retrieving the GUID of the Host to be Removed

Use a **GET** request on the hosts collection to retrieve the Global Unique Identifier (GUID) for the host to be removed. The following example includes the Manager CA certificate file, and uses the **admin@internal** user for authentication, the password for which will be prompted once the

command is executed.

```
curl --request GET --cacert hosted-engine.ca --user admin@internal
https://[Manager.example.com]/api/hosts
```

This request returns the details of all of the hosts in the environment. The host GUID is a hexadecimal string associated with the host name. For more information on the Red Hat Enterprise Virtualization REST API, see the *Red Hat Enterprise Virtualization REST API Guide*.

#### 4. Removing the Fenced Host

Use a **DELETE** request using the GUID of the fenced host to remove the host from the environment. In addition to the previously used options this example specifies headers to specify that the request is to be sent and returned using eXtensible Markup Language (XML), and the body in XML that sets the **force** action to be **true**.

```
curl --request DELETE --cacert hosted-engine.ca --user
admin@internal --header "Content-Type: application/xml" --header
"Accept: application/xml" --data "<action><force>true</force>
</action>" https://[Manager.example.com]/api/hosts/ecde42b0-de2f-
48fe-aa23-1ebd5196b4a5
```

This **DELETE** request can be used to removed every fenced host in the self-hosted engine environment, as long as the appropriate GUID is specified.

Once the host has been removed, it can be re-installed to the self-hosted engine environment.

## 7.3. INSTALLING ADDITIONAL HOSTS TO A RESTORED SELF-HOSTED ENGINE ENVIRONMENT

Re-installing hosted-engine hosts that were present in a restored self-hosted engine environment at the time of the backup is slightly different to adding new hosts. Re-installing hosts will encounter the same VDSM timeout as the first host when it synchronized with the engine.

### Prerequisites

- Prepare a physical host to be used as an additional self-hosted engine host. You can use a freshly installed Red Hat Enterprise Linux host or a self-hosted engine host from the backed up environment. If you are using a freshly installed host, subscribe the host to the required entitlements and install **ovirt-hosted-engine-setup**. See [Section 3.1, “Subscribing to the Required Entitlements”](#). If you are resuing a self-hosted engine host, remove the self-hosted engine configuration. See [Section 6.4, “Removing a Host from a Self-Hosted Engine Environment”](#).

### Procedure 7.7. Adding Additional Self-Hosted Engine Hosts

1. Install the **ovirt-hosted-engine-setup** package.

```
yum install ovirt-hosted-engine-setup
```

2. Configure the host with the deployment command.

```
hosted-engine --deploy
```

If running the **hosted-engine** deployment script over a network, it is recommended to use the **screen** window manager to avoid losing the session in case of network or terminal disruption. Install the screen package first if not installed.

```
screen
```

```
hosted-engine --deploy
```

### 3. Preparing for Initialization

The script begins by requesting confirmation to use the host as a hypervisor for use in a self-hosted engine environment.

```
Continuing will configure this host for serving as hypervisor and
create a VM where you have to install oVirt Engine afterwards.
Are you sure you want to continue? (Yes, No)[Yes]:
```

### 4. Configuring Storage

Select the type of storage to use.

```
During customization use CTRL-D to abort.
Please specify the storage you would like to use (iscsi, nfs3, nfs4)
[nfs3]:
```

- o For NFS storage types, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.

```
Please specify the full shared storage connection path to use
(example: host:/path): storage.example.com:/hosted_engine/nfs
```

- o For iSCSI, specify the iSCSI portal IP address, port, user name and password, and select a target name from the auto-detected list:

```
Please specify the iSCSI portal IP address:
Please specify the iSCSI portal port [3260]:
Please specify the iSCSI portal user:
Please specify the iSCSI portal password:
Please specify the target name (auto-detected values) [default]:
```

### 5. Detecting the Self-Hosted Engine

The **hosted-engine** script detects that the shared storage is being used and asks if this is an additional host setup. You are then prompted for the host ID, which must be an integer not already assigned to a host in the environment.

```
The specified storage location already contains a data domain. Is
this an additional host setup (Yes, No)[Yes]?
[INFO] Installing on additional host
Please specify the Host ID [Must be integer, default: 2]:
```

### 6. Configuring the System

The **hosted-engine** script uses the answer file generated by the original hosted-engine setup. To achieve this, the script requires the FQDN or IP address and the password of the **root** user of that host so as to access and secure-copy the answer file to the additional host.

```
[WARNING] A configuration file must be supplied to deploy Hosted
Engine on an additional host.
The answer file may be fetched from the first host using scp.
If you do not want to download it automatically you can abort the
setup answering no to the following question.
Do you want to scp the answer file from the first host? (Yes, No)
[Yes]:
Please provide the FQDN or IP of the first host:
Enter 'root' user password for host [hosted_engine_1.example.com]:
[INFO] Answer file successfully downloaded
```

## 7. Configuring the Hosted Engine

Specify the name for the additional host to be identified in the Red Hat Enterprise Virtualization environment, and the password for the **admin@internal** user. The name must not already be in use by a host in the environment.

```
Enter the name which will be used to identify this host inside the
Administrator Portal [hosted_engine_2]:
Enter 'admin@internal' user password that will be used for accessing
the Administrator Portal:
Confirm 'admin@internal' user password:
```

## 8. Configuration Preview

Before proceeding, the **hosted-engine** script displays the configuration values you have entered, and prompts for confirmation to proceed with these values.

```
Bridge interface : eth1
Engine FQDN : HostedEngine-VM.example.com
Bridge name : rhevm
SSH daemon port : 22
Firewall manager : iptables
Gateway address : X.X.X.X
Host name for web application : hosted_engine_2
Host ID : 2
Image size GB : 25
Storage connection :
storage.example.com:/hosted_engine/nfs
Console type : vnc
Memory size MB : 4096
MAC address : 00:16:3e:05:95:50
Boot type : disk
Number of CPUs : 2
CPU Type : model_Penryn

Please confirm installation settings (Yes, No)[Yes]:
```

## 9. Confirming Engine Installation Complete

The additional host will contact the Manager and **hosted\_engine\_1**, after which the script will prompt for a selection. Continue by selection option 1.

```
[INFO] Stage: Closing up
To continue make a selection from the options below:
(1) Continue setup - engine installation is complete
(2) Power off and restart the VM
```

- (3) Abort setup
  - (4) Destroy VM and abort setup
- (1, 2, 3, 4)[1]

10. [ INFO ] Engine replied: DB Up!Welcome to Health Status!  
[ INFO ] Waiting for the host to become operational in the engine.  
This may take several minutes...

At this point, the host will become visible in the Administration Portal with **Installing** and **Initializing** states before entering a **Non Operational** state. The host will continue to wait for VDSM host to become operational until it eventually times out.

```
[INFO] Still waiting for VDSM host to become operational...
[INFO] Still waiting for VDSM host to become operational...
[ERROR] Timed out while waiting for host to start. Please check
the logs.
[ERROR] Unable to add hosted_engine_1 to the manager
[INFO] Enabling and starting HA services
 Hosted Engine successfully set up
[INFO] Stage: Clean up
[INFO] Generating answer file '/etc/ovirt-hosted-
engine/answers.conf'
[INFO] Stage: Pre-termination
[INFO] Stage: Termination
```

11. Activate the host.
- a. Log in to the Administration Portal.
  - b. Click the **Hosts** tab and select the host to activate.
  - c. Click the **Activate** button.

The host is now able to host the Manager virtual machine, and other virtual machines running in the self-hosted engine environment.

## CHAPTER 8. INSTALLING ADDITIONAL HOSTS TO A SELF-HOSTED ENVIRONMENT

Adding additional hosts to a self-hosted environment is similar to deploying the original self-hosted engine host, but the procedure is simplified, because the script detects the environment. By running the **hosted-engine** script on the new host, the shared storage domain is detected and the host can be used as a failover host to host the Manager virtual machine when required. You can also attach regular hosts, which are not configured using the **hosted-engine** script, to a self-hosted engine environment; however, they cannot be used to host the Manager virtual machine. It is highly recommended to have at least two **hosted-engine** configured hosts to ensure the Manager virtual machine is highly available.

### Prerequisites

- For a RHEL-based self-hosted engine environment, you must have prepared a freshly installed Red Hat Enterprise Linux system on a physical host, and subscribed the host to the required entitlements. See [Section 3.1, “Subscribing to the Required Entitlements”](#) for more information on subscriptions.
- For a RHEV-H-based self-hosted engine environment, you must have prepared a freshly installed RHEV-H on a physical host. Ensure that at least one network card is configured and that SSH password authentication has been enabled from the **Security** screen.

### Procedure 8.1. Adding an Additional Self-Hosted Engine Host

#### 1. Starting the hosted-engine Script

- For a RHEL-based self-hosted engine host, install the `ovirt-hosted-engine-setup` package, and run the deployment command:

```
yum install ovirt-hosted-engine-setup
```

```
hosted-engine --deploy
```

- For a RHEV-H-based self-hosted engine host, in the text user interface, select the **Hosted Engine** screen, and select **< Deploy Hosted Engine >**. Select **< Add this host to an existing group >**, and select **< OK >**.

#### 2. Configuring Storage

Select the type of storage to use.

```
During customization use CTRL-D to abort.
Please specify the storage you would like to use (iscsi, nfs3, nfs4)
[nfs3]:
```

- For NFS storage types, specify the full address, using either the FQDN or IP address, and path name of the shared storage domain.

```
Please specify the full shared storage connection path to use
(example: host:/path): storage.example.com:/hosted_engine/nfs
```

- For iSCSI, specify the iSCSI portal IP address, port, user name and password, and select a target name from the auto-detected list:

-

```

Please specify the iSCSI portal IP address:
Please specify the iSCSI portal port [3260]:
Please specify the iSCSI portal user:
Please specify the iSCSI portal password:
Please specify the target name (auto-detected values) [default]:

```

### 3. Detecting the Self-Hosted Engine

The **hosted-engine** script detects that the shared storage is being used and asks if this is an additional host setup. You are then prompted for the host ID, which must be an integer not already assigned to an additional host in the environment.

```

The specified storage location already contains a data domain. Is
this an additional host setup (Yes, No)[Yes]?
[INFO] Installing on additional host
Please specify the Host ID [Must be integer, default: 2]:

```

### 4. Configuring the System

The **hosted-engine** script uses the answer file generated by the original hosted-engine setup. To achieve this, the script requires the FQDN or IP address and the password of the **root** user of that host so as to access and secure-copy the answer file to the additional host.

```

[WARNING] A configuration file must be supplied to deploy Hosted
Engine on an additional host.
The answer file may be fetched from the first host using scp.
If you do not want to download it automatically you can abort the
setup answering no to the following question.
Do you want to scp the answer file from the first host? (Yes, No)
[Yes]:
Please provide the FQDN or IP of the first host:
Enter 'root' user password for host Host-HE1.example.com:
[INFO] Answer file successfully downloaded

```

### 5. Configuring the Hosted Engine

Specify the name for the additional host to be identified in the Red Hat Enterprise Virtualization environment, and the password for the **admin@internal** user.

```

Enter the name which will be used to identify this host inside the
Administrator Portal [hosted_engine_2]:
Enter 'admin@internal' user password that will be used for accessing
the Administrator Portal:
Confirm 'admin@internal' user password:

```

### 6. Configuration Preview

Before proceeding, the **hosted-engine** script displays the configuration values you have entered, and prompts for confirmation to proceed with these values.

```

Bridge interface : eth1
Engine FQDN : HostedEngine-VM.example.com
Bridge name : rhevm
SSH daemon port : 22
Firewall manager : iptables
Gateway address : X.X.X.X
Host name for web application : hosted_engine_2

```



```
Host ID : 2
Image size GB : 25
Storage connection :
storage.example.com:/hosted_engine/nfs
Console type : vnc
Memory size MB : 4096
MAC address : 00:16:3e:05:95:50
Boot type : disk
Number of CPUs : 2
CPU Type : model_Penryn
```

```
Please confirm installation settings (Yes, No)[Yes]:
```

After confirmation, the script completes installation of the host and adds it to the environment.

## CHAPTER 9. MIGRATING DATABASES

### 9.1. MIGRATING THE SELF-HOSTED ENGINE DATABASE TO A REMOTE SERVER DATABASE

You can migrate the **engine** database of a self-hosted engine to a remote database server after the Red Hat Enterprise Virtualization Manager has been initially configured.

This task is split into two procedures. The first procedure, preparing the remote PostgreSQL database, is a necessary prerequisite for the migration itself and presumes that the server has Red Hat Enterprise Linux installed and has been configured with the appropriate subscriptions.

The second procedure, migrating the database, uses PostgreSQL **pg\_dump** and **pg\_restore** commands to handle the database backup and restore. As such, it is necessary to edit the **/etc/ovirt-engine/engine.conf.d/10-setup-database.conf** file with the updated information. At a minimum, you must update the location of the new database server. If the database name, role name, or password are modified for the new database server, these values must also be updated in the **10-setup-database.conf** file. This procedure uses the default **engine** database settings to minimize modification of this file.

#### Procedure 9.1. Preparing the Remote PostgreSQL Database for use with the Red Hat Enterprise Virtualization Manager

1. Log in to the remote database server and install the PostgreSQL server package:

```
yum install postgresql-server
```

2. Initialize the PostgreSQL database, start the **postgresql** service, and ensure that this service starts on boot:

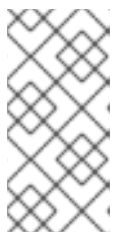
```
service postgresql initdb
service postgresql start
chkconfig postgresql on
```

3. Connect to the **psql** command line interface as the **postgres** user:

```
su - postgres
$ psql
```

4. Create a user for the Manager to use when it writes to and reads from the database. The default user name on the Manager is **engine**:

```
postgres=# create role user_name with login encrypted password
'password';
```



#### NOTE

The password for the **engine** user is located in plain text in **/etc/ovirt-engine/engine.conf.d/10-setup-database.conf**. Any password can be used when creating the role on the new server, however if a different password is used then this file must be updated with the new password.

5. Create a database in which to store data about the Red Hat Enterprise Virtualization environment. The default database name on the Manager is **engine**, and the default user name is **engine**:

```
postgres=# create database database_name owner user_name template
template0 encoding 'UTF8' lc_collate 'en_US.UTF-8' lc_ctype
'en_US.UTF-8';
```

6. Ensure the database can be accessed remotely by enabling md5 client authentication. Edit the `/var/lib/pgsqli/data/pg_hba.conf` file, and add the following line immediately underneath the line starting with **local** at the bottom of the file, replacing `X.X.X.X` with the IP address of the Manager:

```
host database_name user_name X.X.X.X/32 md5
```

7. Allow TCP/IP connections to the database. Edit the `/var/lib/pgsqli/data/postgresql.conf` file and add the following line:

```
listen_addresses='*'
```

This example configures the **postgresql** service to listen for connections on all interfaces. You can specify an interface by giving its IP address.

8. Open the default port used for PostgreSQL database connections, and save the updated firewall rules:

```
iptables -I INPUT 5 -p tcp --dport 5432 -j ACCEPT
service iptables save
```

9. Restart the **postgresql** service:

```
service postgresql restart
```

Optionally, set up SSL to secure database connections using the instructions at <http://www.postgresql.org/docs/8.4/static/ssl-tcp.html#SSL-FILE-USAGE>.

## Procedure 9.2. Migrating the Database

1. Log in to one of the hosted-engine hosts and place the environment into **global** maintenance mode. This disables the High Availability agents and prevents the Manager virtual machine from being migrated occurring during the procedure:

```
hosted-engine --set-maintenance --mode=global
```

2. Log in to the Manager virtual machine and stop the **ovirt-engine** service so that it does not interfere with the engine backup:

```
service ovirt-engine stop
```

3. Create the **engine** database backup using the PostgreSQL **pg\_dump** command:

```
su - postgres -c 'pg_dump -F c engine -f /tmp/engine.dump'
```

- Copy the backup file to the new database server. The target directory must allow write access for the **postgres** user:

```
scp /tmp/engine.dump root@new.database.server.com:/tmp/engine.dump
```

- Log in to the new database server and restore the database using the PostgreSQL **pg\_restore** command:

```
su - postgres -c 'pg_restore -d engine /tmp/engine.dump'
```

- Log in to the Manager virtual machine and update the **/etc/ovirt-engine/engine.conf.d/10-setup-database.conf** and replace the **localhost** value of **ENGINE\_DB\_HOST** with the IP address of the new database server. If the engine name, role name, or password differ on the new database server, update those values in this file.
- Now that the database has been migrated, start the **ovirt-engine** service:

```
service ovirt-engine start
```

- Log in to a hosted-engine host and turn off maintenance mode, enabling the High Availability agents:

```
hosted-engine --set-maintenance --mode=none
```

## 9.2. MIGRATING DATA WAREHOUSE AND REPORTS TO SEPARATE MACHINES

Migrate the Data Warehouse service, the Reports service, or both from the Red Hat Enterprise Virtualization Manager to separate machines. Hosting the Data Warehouse service and the Reports service on separate machines reduces the load on each individual machine, and allows each service to avoid potential conflicts caused by sharing CPU and memory with other processes.

Migrate the Data Warehouse service and connect it with the existing **ovirt\_engine\_history** database, or optionally migrate the **ovirt\_engine\_history** database to a new database machine before migrating the Data Warehouse service. If the **ovirt\_engine\_history** database is hosted on the Manager, migrating the database in addition to the Data Warehouse service further reduces the competition for resources on the Manager machine. You can migrate the database to the same machine onto which you will migrate the Data Warehouse service, or to a machine that is separate from both the Manager machine and the new Data Warehouse service machine.

## 9.3. MIGRATING THE DATA WAREHOUSE DATABASE TO A SEPARATE MACHINE

Optionally migrate the **ovirt\_engine\_history** database before you migrate the Data Warehouse service. This procedure uses **pg\_dump** to create a database backup, and **psql** to restore the backup on the new database machine. The **pg\_dump** command provides flexible options for backing up and restoring databases; for more information on options that may be suitable for your system, see the **pg\_dump** manual page.

The following procedure assumes that a PostgreSQL database has already been configured on the new machine. To migrate the Data Warehouse service only, see [Section 9.4, “Migrating the Data Warehouse Service to a Separate Machine”](#).



### IMPORTANT

If the existing Data Warehouse database is connected to an existing Reports service, you must reconfigure that service by running **engine-setup** and entering the details of the new Data Warehouse database when prompted. If you do not do this, the Reports service is still connected to the old database, and does not receive any new data.

#### Procedure 9.3. Migrating the Data Warehouse Database to a Separate Machine

1. On the existing database machine, dump the **ovirt\_engine\_history** database into a SQL script file:

```
pg_dump ovirt_engine_history > ovirt_engine_history.sql
```

2. Copy the script file from the existing database machine to the new database machine.
3. Restore the **ovirt\_engine\_history** database on the new database machine:

```
psql -d ovirt_engine_history -f ovirt_engine_history.sql
```

The command above assumes that the database on the new machine is also named **ovirt\_engine\_history**.

## 9.4. MIGRATING THE DATA WAREHOUSE SERVICE TO A SEPARATE MACHINE

Migrate a Data Warehouse service that was installed and configured on the Red Hat Enterprise Virtualization Manager to a dedicated host machine. Hosting the Data Warehouse service on a separate machine helps to reduce the load on the Manager machine. Note that this procedure migrates the Data Warehouse service only; to migrate the Data Warehouse database (also known as the **ovirt\_engine\_history** database) prior to migrating the Data Warehouse service, see [Section 9.3, “Migrating the Data Warehouse Database to a Separate Machine”](#).

Installing this scenario involves four key steps:

1. Set up the new Data Warehouse machine.
2. Stop the Data Warehouse service on the Manager machine.
3. Configure the new Data Warehouse machine.
4. Remove the Data Warehouse package from the Manager machine.

### Prerequisites

Ensure that you have completed the following prerequisites:

1. You must have installed and configured the Manager and Data Warehouse on the same machine.

2. To set up the new Data Warehouse machine, you must have the following:
  - A virtual or physical machine with Red Hat Enterprise Linux 6.6 or later versions of Red Hat Enterprise Linux 6 installed.
  - A subscription to the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** entitlement pools.
  - The password from the Manager's `/etc/ovirt-engine/engine.conf.d/10-setup-database.conf` file.
  - Allowed access from the Data Warehouse machine to the Manager database machine's TCP port 5432.
  - The `ovirt_engine_history` database credentials from the Manager's `/etc/ovirt-engine-dwh/ovirt-engine-dwhd.conf.d/10-setup-database.conf` file. If you migrated the `ovirt_engine_history` database using [Section 9.3, "Migrating the Data Warehouse Database to a Separate Machine"](#), retrieve the credentials you defined during the database setup on that machine.

#### Procedure 9.4. Step 1: Setting up the New Data Warehouse Machine

1. Register your system with the Content Delivery Network, entering your Customer Portal user name and password when prompted:

```
subscription-manager register
```

2. Find the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** subscription pools and note down the pool IDs.

```
subscription-manager list --available
```

3. Use the pool IDs located in the previous step to attach the entitlements to the system:

```
subscription-manager attach --pool=pool_id
```

4. Disable all existing repositories:

```
subscription-manager repos --disable=*
```

5. Enable the required channels:

```
subscription-manager repos --enable=rhel-6-server-rpms
subscription-manager repos --enable=rhel-6-server-supplementary-rpms
subscription-manager repos --enable=rhel-6-server-rhev-3.6-rpms
subscription-manager repos --enable=jb-eap-6-for-rhel-6-server-rpms
```

6. Ensure that all packages currently installed are up to date:

```
yum update
```

7. Install the `rhev-dwh-setup` package:

```
yum install rhevm-dwh-setup
```

### Procedure 9.5. Step 2: Stopping the Data Warehouse Service on the Manager Machine

1. Stop the Data Warehouse service:

```
service ovirt-engine-dwhd stop
```

2. If the `ovirt_engine_history` database, the Manager database, or both are hosted on the Manager machine and were configured by a previous version (Red Hat Enterprise Virtualization 3.4 or prior) that was then upgraded, you must allow the new Data Warehouse machine to access them. Edit the `/var/lib/pgsql/data/postgresql.conf` file and modify the `listen_addresses` line so that it matches the following:

```
listen_addresses = '*'
```

If the line does not exist or has been commented out, add it manually.

If one or both databases are hosted on a remote machine, you must manually grant access by editing the `postgres.conf` file on each machine, and adding the `listen_addresses` line, as above. If both databases are hosted on the Manager machine and were configured during a clean setup of Red Hat Enterprise Virtualization Manager 3.5, access is granted by default.

3. Restart the `postgresql` service:

```
service postgresql restart
```

### Procedure 9.6. Step 3: Configuring the New Data Warehouse Machine

1. Run the `engine-setup` command to begin configuration of Data Warehouse on the machine:

```
engine-setup
```

2. Press **Enter** to configure Data Warehouse:

```
Configure Data Warehouse on this host (Yes, No) [Yes]:
```

3. Press **Enter** to automatically configure the firewall, or type **No** and press **Enter** to maintain existing settings:

```
Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
```

If you choose to automatically configure the firewall, and no firewall managers are active, you are prompted to select your chosen firewall manager from a list of supported options. Type the name of the firewall manager and press **Enter**. This applies even in cases where only one option is listed.

4. Press **Enter** to accept the automatically detected hostname, or enter an alternative hostname and press **Enter**:

```
Host fully qualified DNS name of this server [autodetected host name]:
```

5. Answer the following question about the location of the **ovirt\_engine\_history** database:

```
Where is the DWH database located? (Local, Remote) [Local]: Remote
```

Type the alternative option as shown above and then press **Enter**.

6. Enter the fully qualified domain name and password for your **ovirt\_engine\_history** database host. Press **Enter** to accept the default values in each other field:

```
DWH database host []: dwh-db-fqdn
DWH database port [5432]:
DWH database secured connection (Yes, No) [No]:
DWH database name [ovirt_engine_history]:
DWH database user [ovirt_engine_history]:
DWH database password: password
```

7. Enter the fully qualified domain name and password for the Manager database machine. Press **Enter** to accept the default values in each other field:

```
Engine database host []: engine-db-fqdn
Engine database port [5432]:
Engine database secured connection (Yes, No) [No]:
Engine database name [engine]:
Engine database user [engine]:
Engine database password: password
```

8. Press **Enter** to create a backup of the existing Data Warehouse database:

```
Would you like to backup the existing database before upgrading it?
(Yes, No) [Yes]:
```

The time and space required for the database backup depends on the size of the database. It may take several hours to complete. If you choose not to back up the database here, and **engine-setup** fails for any reason, you will not be able to restore the database or any of the data within it. The location of the backup file appears at the end of the setup script.

9. Confirm that you want to permanently disconnect the existing Data Warehouse service from the Manager:

```
Do you want to permanently disconnect this DWH from the engine?
(Yes, No) [No]:
```

10. Confirm your installation settings:

```
Please confirm installation settings (OK, Cancel) [OK]:
```



**Procedure 9.7. Step 4: Removing the Data Warehouse Package from the Manager Machine**

1. Remove the Data Warehouse package:

```
yum remove rhevm-dwh
```

This step prevents the Data Warehouse service from attempting to automatically restart after an hour.

2. Remove the Data Warehouse files:

```
rm -rf /etc/ovirt-engine-dwh /var/lib/ovirt-engine-dwh
```

The Data Warehouse service is now hosted on a separate machine from that on which the Manager is hosted.

**9.5. MIGRATING THE REPORTS SERVICE TO A SEPARATE MACHINE**

Migrate a Reports service that was installed and configured on the Red Hat Enterprise Virtualization Manager to a dedicated host machine. Hosting the Reports service on a separate machine helps to reduce the load on the Manager machine. Note that this procedure migrates the Reports service only. The Reports database (also known as the **ovirt\_engine\_reports** database) cannot be migrated; you must create a new **ovirt\_engine\_reports** database when you configure Reports on the new machine. Saved ad hoc reports can be migrated from the Manager machine to the new Reports machine. Migrate the Reports service only after the Manager and Data Warehouse have been configured.

Installing this scenario involves three key steps:

1. Configure the new Reports machine.
2. Migrate any saved reports to the new Reports machine.
3. Remove the Reports service from the Manager machine.

**Prerequisites**

Ensure that you have completed the following prerequisites:

1. You must have installed and configured the Manager and Reports on the same machine.
2. You must have installed and configured Data Warehouse, either on the Manager machine or on a separate machine.
3. To set up the new Reports machine, you must have the following:
  - o A virtual or physical machine with Red Hat Enterprise Linux 6.6 or later versions of Red Hat Enterprise Linux 6 installed
  - o A subscription to the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** entitlement pools
  - o The password from the Data Warehouse machine's **/etc/ovirt-engine-dwh/ovirt-engine-dwhd.conf.d/10-setup-database.conf** file

- o Allowed access from the Reports machine to the Manager database machine's TCP port 5432

### Procedure 9.8. Step 1: Configuring the New Reports Machine

1. Register your system with the Content Delivery Network, entering your Customer Portal user name and password when prompted:

```
subscription-manager register
```

2. Find the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** subscription pools and note down the pool IDs.

```
subscription-manager list --available
```

3. Use the pool IDs located in the previous step to attach the entitlements to the system:

```
subscription-manager attach --pool=pool_id
```

4. Disable all existing repositories:

```
subscription-manager repos --disable=*
```

5. Enable the required channels:

```
subscription-manager repos --enable=rhel-6-server-rpms
subscription-manager repos --enable=rhel-6-server-supplementary-
rpms
subscription-manager repos --enable=rhel-6-server-rhev-3.6-rpms
subscription-manager repos --enable=jb-eap-6-for-rhel-6-server-
rpms
```

6. Ensure that all packages currently installed are up to date:

```
yum update
```

7. Install the `rhev-reports-setup` package:

```
yum install rhvm-reports-setup
```

8. Run the **engine-setup** command to begin configuration of Reports on the machine:

```
engine-setup
```

9. Press **Enter** to configure Reports:

```
Configure Reports on this host (Yes, No) [Yes]:
```

10. Press **Enter** to automatically configure the firewall, or type **No** and press **Enter** to maintain existing settings:

```
-
```

```

Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:

```

If you choose to automatically configure the firewall, and no firewall managers are active, you are prompted to select your chosen firewall manager from a list of supported options. Type the name of the firewall manager and press **Enter**. This applies even in cases where only one option is listed.

11. Press **Enter** to accept the automatically detected hostname, or enter an alternative hostname and press **Enter**:

```

Host fully qualified DNS name of this server [autodetected host
name]:

```

12. Enter the fully qualified domain name of the Manager machine, and then press **Enter**:

```

Host fully qualified DNS name of the engine server []:

```

13. Answer the following questions about the **ovirt\_engine\_reports** database. Press **Enter** to allow setup to create and configure a local database:

```

Where is the Reports database located? (Local, Remote) [Local]:
Setup can configure the local postgresql server automatically for
the Reports to run. This may conflict with existing applications.
Would you like Setup to automatically configure postgresql and
create Reports database, or prefer to perform that manually?
(Automatic, Manual) [Automatic]:

```

14. Enter the fully qualified domain name and password for your **ovirt\_engine\_history** database host. Press **Enter** to accept the default values in each other field:

```

DWH database host []: dwh-db-fqdn
DWH database port [5432]:
DWH database secured connection (Yes, No) [No]:
DWH database name [ovirt_engine_history]:
DWH database user [ovirt_engine_history]:
DWH database password: password

```

15. Press **Enter** to allow setup to sign the Reports certificate and Apache certificate on the Manager via SSH:

```

Setup will need to do some actions on the remote engine server.
Either automatically, using ssh as root to access it, or you will be
prompted to manually perform each such action.
Please choose one of the following:
1 - Access remote engine server using ssh as root
2 - Perform each action manually, use files to copy content around
(1, 2) [1]:

```

16. Press **Enter** to accept the default SSH port, or enter an alternative port number and then press **Enter**:

```
ssh port on remote engine server [22]:
```

17. Enter the root password for the Manager machine:

```
root password on remote engine server manager-fqdn.com:
```

18. Press **Enter** to allow automatic configuration of SSL on Apache:

```
Setup can configure apache to use SSL using a certificate issued
from the internal CA.
Do you wish Setup to configure that, or prefer to perform that
manually? (Automatic, Manual) [Automatic]:
```

19. Set a password for the Reports administrative users (**admin** and **superuser**). Note that the reports system maintains its own set of credentials that are separate to those used for the Manager:

```
Reports power users password:
```

You are prompted to enter the password a second time to confirm it.

20. Confirm your installation settings:

```
Please confirm installation settings (OK, Cancel) [OK]:
```

### Procedure 9.9. Step 2: Migrating Saved Reports to the New Reports Machine

1. On the Manager machine, run the **ovirt-engine-reports-tool** command:

```
ovirt-engine-reports-tool
```

2. Enter the number that corresponds to the export option, and press **Enter**:

```
(2) Export Jasperreports saved reports to a zip file
(1, 2, 3) []: 2
```

3. Enter the absolute path for the zip file to export saved reports to, and press **Enter**:

```
Filename to export saved reports to: /tmp/saved-reports.zip
```

4. Copy the zip file to the new Reports machine:

```
scp /tmp/saved-reports.zip reports-machine-fqdn:/tmp/
```

5. On the new Reports machine, run the **ovirt-engine-reports-tool** command:

```
ovirt-engine-reports-tool
```

6. Enter the number that corresponds to the import option, and press **Enter**:

```
(3) Import a saved reports zip file to Jasperreports
(1, 2, 3) []: 3
```

7. Enter the absolute path of the zip file from which to import, and press **Enter**:

```
Filename to import saved reports from: /tmp/saved-reports.zip
```

When the command completes, the saved reports are visible in the Reports Portal of the new Reports machine.

### Procedure 9.10. Step 3: Removing the Reports Service from the Manager Machine

1. Stop the Reports service:

```
service ovirt-engine-reportsd stop
```

2. Remove the Reports package:

```
yum remove rhvm-reports
```

3. Remove the Reports files:

```
rm -rf /etc/ovirt-engine-reports /var/lib/ovirt-engine-reports
```

4. Remove the Reports database and user. The default name for both is **ovirt\_engine\_reports**:

```
su - postgres
$ psql
postgres=# drop database ovirt_engine_reports;
postgres=# drop user ovirt_engine_reports;
```



#### NOTE

You can configure more than one working Reports instance, and continue to log in and view reports from an older instance; however, the Manager will directly connect to and have SSO with only the last Reports instance that was configured using **engine-setup**. This means that the Administration Portal includes dashboards from and direct links to only the most recent Reports installation.

## CHAPTER 10. DATA WAREHOUSE AND REPORTS

### 10.1. OVERVIEW OF CONFIGURING DATA WAREHOUSE AND REPORTS

The Red Hat Enterprise Virtualization Manager includes a comprehensive management history database, which can be utilized by any application to extract a range of information at the data center, cluster, and host levels. Installing Data Warehouse creates the `ovirt_engine_history` database, to which the Manager is configured to log information for reporting purposes. Red Hat Enterprise Virtualization Manager Reports functionality is also available as an optional component. Reports provides a customized implementation of JasperServer and JasperReports, an open source reporting tool capable of being embedded in Java-based applications. It produces reports that can be built and accessed via a web user interface, and then rendered to screen, printed, or exported to a variety of formats including PDF, Excel, CSV, Word, RTF, Flash, ODT and ODS. The Data Warehouse and Reports components are optional, and must be installed and configured in addition to the Manager setup.

Before proceeding with Data Warehouse and Reports installation you must first have installed and configured the Red Hat Enterprise Virtualization Manager. The Reports functionality depends on the presence of the Data Warehouse; Data Warehouse must be installed and configured before Reports.

It is recommended that you set the system time zone for all machines in your Data Warehouse/Reports deployment to UTC. This ensures that data collection is not interrupted by variations in your local time zone: for example, a change from summer time to winter time.

To calculate an estimate of the space and resources the `ovirt_engine_history` database will use, use the [RHEV Manager History Database Size Calculator](#) tool. The estimate is based on the number of entities and the length of time you have chosen to retain the history records.

### 10.2. DATA WAREHOUSE AND REPORTS CONFIGURATION NOTES

#### Behavior

The following behavior is expected in `engine-setup`:

Install the Data Warehouse package and the Reports package, run `engine-setup`, and answer **No** to configuring Data Warehouse and Reports:

```
Configure Data Warehouse on this host (Yes, No) [Yes]: No
Configure Reports on this host (Yes, No) [Yes]: No
```

Run `engine-setup` again; setup no longer presents the option to configure those services.

#### Workaround

To force `engine-setup` to present both options again, run `engine-setup --reconfigure-optional-components`.



#### NOTE

To configure only the currently installed Data Warehouse and Reports packages, and prevent setup from applying package updates found in enabled repositories, add the `--offline` option .

## 10.3. DATA WAREHOUSE AND REPORTS INSTALLATION OPTIONS

Data Warehouse and Reports installation requires between one and three machines, and can be configured in one of the following ways:

**1. Install and configure both Data Warehouse and Reports on the machine on which the Manager is installed.**

This configuration hosts the Data Warehouse and Reports services on your Manager machine. This requires only a single registered machine, and is the simplest to configure; however, it also requires that the services share CPU and memory, and increases the demand on the host machine. Users who require access to the Data Warehouse service or the Reports service will require access to the Manager machine itself.

**2. Install and configure both Data Warehouse and Reports on one separate machine.**

This configuration hosts Data Warehouse and Reports on a single, separate machine. This requires two registered machines; however, it reduces the load on the Manager machine, and avoids potential CPU and memory-sharing conflicts on that machine. Administrators can also allow user access to the Data Warehouse-Reports machine, without the need to grant access to the Manager machine. Note that the Data Warehouse and Reports services will still compete for resources on their single host.

**3. Install and configure Data Warehouse on a separate machine, then install and configure Reports on a separate machine.**

This configuration separates each service onto its own dedicated host. This requires three registered machines; however, it reduces the load on each individual machine, and allows each service to avoid potential conflicts caused by sharing CPU and memory with other processes. Administrators can also allow user access to one particular machine, without the need to grant access to either of the two other machines.

**4. Install and configure Data Warehouse on the Manager machine, then install and configure Reports on a separate machine.**

This configuration hosts Data Warehouse on the Manager machine, and Reports on a separate host. This requires two registered machines; however, it reduces the load on the Manager machine, and avoids some memory-sharing conflicts. Administrators can allow user access to the Reports machine, without the need to grant access to the Manager machine.

**5. Install and configure Data Warehouse on a separate machine, then install and configure Reports on the Manager machine.**

This configuration hosts Data Warehouse on a separate machine, and Reports on the Manager machine. This requires two registered machines; however, it reduces the load on the Manager machine, and avoids some memory-sharing conflicts. Administrators can allow user access to the Data Warehouse machine, without the need to grant access to the Manager machine.

If you choose to host the Data Warehouse database on a machine that is separate from the machine on which the Data Warehouse service is installed, you will require an additional machine for that purpose. The same is true if you choose to host the Reports database remotely.



### NOTE

Detailed user, administration, and installation guides for JasperReports are available in `/usr/share/jasperreports-server-pro/docs/`

### 10.3.1. Installing and Configuring Data Warehouse and Reports on the Red Hat Enterprise Virtualization Manager

#### Overview

Install and configure Data Warehouse and Red Hat Enterprise Virtualization Manager Reports on the same machine as the Red Hat Enterprise Virtualization Manager.

#### Prerequisites

Ensure that you have completed the following prerequisites:

1. You must have installed and configured the Manager on this machine.
2. If you choose to use a remote Data Warehouse database or Reports database, you must set up each database before installing the Data Warehouse and Reports services. You must have the following information about each database host:
  - o The fully qualified domain name of the host
  - o The port through which the database can be reached (5432 by default)
  - o The database name
  - o The database user
  - o The database password
3. If you are using the self-hosted engine, you must move it to maintenance mode:

```
hosted-engine --set-maintenance --mode=global
```

#### Procedure 10.1. Installing and Configuring Data Warehouse and Reports on the Red Hat Enterprise Virtualization Manager

1. Install the `rhev-dwh` package and the `rhev-reports` package on the system where the Red Hat Enterprise Virtualization Manager is installed:

```
yum install rhvm-dwh rhvm-reports
```

2. Run the **engine-setup** command to begin configuration of Data Warehouse and Reports on the machine:

```
engine-setup
```

3. Follow the prompts to configure Data Warehouse and Reports:

```
Configure Data Warehouse on this host (Yes, No) [Yes]:
Configure Reports on this host (Yes, No) [Yes]:
```

4. Press **Enter** to automatically configure the firewall, or type **No** and press **Enter** to maintain existing settings:

```
Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
```



settings.

Do you want Setup to configure the firewall? (Yes, No) [Yes]:

If you choose to automatically configure the firewall, and no firewall managers are active, you are prompted to select your chosen firewall manager from a list of supported options. Type the name of the firewall manager and press **Enter**. This applies even in cases where only one option is listed.

5. Answer the following questions about the Data Warehouse database and the Reports database:

Where is the DWH database located? (Local, Remote) [Local]:

Setup can configure the local postgresql server automatically for the DWH to run. This may conflict with existing applications.

Would you like Setup to automatically configure postgresql and create DWH database, or prefer to perform that manually? (Automatic, Manual) [Automatic]:

Where is the Reports database located? (Local, Remote) [Local]:

Setup can configure the local postgresql server automatically for the Reports to run. This may conflict with existing applications.

Would you like Setup to automatically configure postgresql and create Reports database, or prefer to perform that manually? (Automatic, Manual) [Automatic]:

Press **Enter** to choose the highlighted defaults, or type your alternative preference and then press **Enter**. If you select **Remote**, you are prompted to provide details about each remote database host.

6. Set a password for the Reports administrative users (**admin** and **superuser**). Note that the reports system maintains its own set of credentials that are separate to those used for the Manager:

Reports power users password:

You are prompted to enter the password a second time to confirm it.

7. For the configuration to take effect, the **ovirt-engine** service must be restarted. The **engine-setup** command prompts you:

During execution engine service will be stopped (OK, Cancel) [OK]:

Press **Enter** to proceed. The **ovirt-engine** service restarts automatically later in the command.

8. Confirm your installation settings:

Please confirm installation settings (OK, Cancel) [OK]:

## Next Steps

Access the Reports Portal at <http://demo.redhat.com/ovirt-engine-reports>, replacing *demo.redhat.com* with the fully qualified domain name of the Manager. If during the Manager installation you selected a non-default HTTP port then append *:port* to the URL, replacing *:port* with the port that you chose.

Log in using the user name **admin** and the password you set during reports installation. Note that the first time you log in to Red Hat Enterprise Virtualization Manager Reports, a number of web pages are generated and, as a result, your initial attempt to log in may take some time to complete.

### 10.3.2. Installing and Configuring Data Warehouse and Reports on the Same Separate Machine

#### Overview

Install and configure Data Warehouse and Red Hat Enterprise Virtualization Manager Reports together on a separate host from that on which the Red Hat Enterprise Virtualization Manager is installed. Hosting the Data Warehouse service and the Reports service on a separate machine helps to reduce the load on the Manager machine. Note that hosting Data Warehouse and Reports on the same machine means that these processes will share CPU and memory.

#### Prerequisites

Ensure that you have completed the following prerequisites:

1. You must have installed and configured the Manager on a separate machine.
2. To set up the Data Warehouse and Reports machine, you must have the following:
  - o A virtual or physical machine with Red Hat Enterprise Linux 6.6 or later versions of Red Hat Enterprise Linux 6 installed.
  - o A subscription to the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** subscription pools.
  - o The password from the Manager's `/etc/ovirt-engine/engine.conf.d/10-setup-database.conf` file.
  - o Allowed access from the Data Warehouse-Reports machine to the Manager database machine's TCP port 5432.
3. If you choose to use a remote Data Warehouse database or Reports database, you must set up each database before installing the Data Warehouse and Reports services. You must have the following information about each database host:
  - o The fully qualified domain name of the host
  - o The port through which the database can be reached (5432 by default)
  - o The database name
  - o The database user
  - o The database password

#### Procedure 10.2. Installing and Configuring Data Warehouse and Reports on the Same Separate Machine

1. Register your system with the Content Delivery Network, entering your Customer Portal user name and password when prompted:

```
subscription-manager register
```

- Find the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** subscription pools and note down the pool IDs.

```
subscription-manager list --available
```

- Use the pool IDs located in the previous step to attach the entitlements to the system:

```
subscription-manager attach --pool=pool_id
```

- Disable all existing repositories:

```
subscription-manager repos --disable=*
```

- Enable the required repositories:

```
subscription-manager repos --enable=rhel-6-server-rpms
subscription-manager repos --enable=rhel-6-server-supplementary-
rpms
subscription-manager repos --enable=rhel-6-server-rhev-3.6-rpms
subscription-manager repos --enable=jb-eap-6-for-rhel-6-server-
rpms
```

- Ensure that all packages currently installed are up to date:

```
yum update
```

- Install the `rhev-dwh-setup` and `rhev-reports-setup` packages:

```
yum install rhvm-dwh-setup rhvm-reports-setup
```

- Run the **engine-setup** command to begin configuration of Data Warehouse and Reports on the machine:

```
engine-setup
```

- Follow the prompts to configure Data Warehouse and Reports:

```
Configure Data Warehouse on this host (Yes, No) [Yes]:
Configure Reports on this host (Yes, No) [Yes]:
```

- Press **Enter** to automatically configure the firewall, or type **No** and press **Enter** to maintain existing settings:

```
Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
```

If you choose to automatically configure the firewall, and no firewall managers are active, you are prompted to select your chosen firewall manager from a list of supported options. Type the name of the firewall manager and press **Enter**. This applies even in cases where only one option is

listed.

11. Press **Enter** to accept the automatically detected hostname, or enter an alternative hostname and press **Enter**:

```
Host fully qualified DNS name of this server [autodetected
hostname]:
```

12. Enter the fully qualified domain name of the Manager machine, and then press **Enter**:

```
Host fully qualified DNS name of the engine server []:
```

13. Answer the following questions about the Data Warehouse database and the Reports database:

```
Where is the DWH database located? (Local, Remote) [Local]:
Setup can configure the local postgresql server automatically for
the DWH to run. This may conflict with existing applications.
Would you like Setup to automatically configure postgresql and
create DWH database, or prefer to perform that manually? (Automatic,
Manual) [Automatic]:
Where is the Reports database located? (Local, Remote) [Local]:
Setup can configure the local postgresql server automatically for
the Reports to run. This may conflict with existing applications.
Would you like Setup to automatically configure postgresql and
create Reports database, or prefer to perform that manually?
(Automatic, Manual) [Automatic]:
```

Press **Enter** to choose the highlighted defaults, or type your alternative preference and then press **Enter**. If you select **Remote**, you are prompted to provide details about each remote database host.

14. Enter the fully qualified domain name and password for the Manager database machine. Press **Enter** to accept the default values in each other field:

```
Engine database host []: engine-db-fqdn
Engine database port [5432]:
Engine database secured connection (Yes, No) [No]:
Engine database name [engine]:
Engine database user [engine]:
Engine database password: password
```

15. Press **Enter** to allow setup to sign the Reports certificate and Apache certificate on the Manager via SSH:

```
Setup will need to do some actions on the remote engine server.
Either automatically, using ssh as root to access it, or you will be
prompted to manually perform each such action.
Please choose one of the following:
1 - Access remote engine server using ssh as root
2 - Perform each action manually, use files to copy content around
(1, 2) [1]:
```

16. Press **Enter** to accept the default SSH port, or enter an alternative port number and then press **Enter**:

```
ssh port on remote engine server [22]:
```

17. Enter the root password for the Manager machine:

```
root password on remote engine server manager-fqdn.com:
```

18. Press **Enter** to allow automatic configuration of SSL on Apache:

```
Setup can configure apache to use SSL using a certificate issued
from the internal CA.
Do you wish Setup to configure that, or prefer to perform that
manually? (Automatic, Manual) [Automatic]:
```

19. Set a password for the Reports administrative users (**admin** and **superuser**). Note that the reports system maintains its own set of credentials that are separate to those used for the Manager:

```
Reports power users password:
```

You are prompted to enter the password a second time to confirm it.

20. Confirm your installation settings:

```
Please confirm installation settings (OK, Cancel) [OK]:
```

## Next Steps

Access the Reports Portal at `http://demo.redhat.com/ovirt-engine-reports`, replacing `demo.redhat.com` with the fully qualified domain name of the Manager. If during the Manager installation you selected a non-default HTTP port then append `:port` to the URL, replacing `:port` with the port that you chose.

Log in using the user name **admin** and the password you set during reports installation. Note that the first time you log in to Red Hat Enterprise Virtualization Manager Reports, a number of web pages are generated and, as a result, your initial attempt to log in may take some time to complete.

### 10.3.3. Installing and Configuring Data Warehouse and Reports on Separate Machines

#### Overview

Install and configure Data Warehouse on a separate host from that on which the Red Hat Enterprise Virtualization Manager is installed, then install and configure Red Hat Enterprise Virtualization Manager Reports on a third machine. Hosting the Data Warehouse and Reports services on separate machines helps to reduce the load on the Manager machine. Separating Data Warehouse and Reports onto individual machines further reduces the demand each service places on its host machine, and avoids any conflicts caused by sharing CPU and memory with other processes.

Installing this scenario involves two key steps:

1. Install and configure Data Warehouse on a separate machine.

2. Install and configure Reports on a separate machine.

### Prerequisites

Ensure that you have completed the following prerequisites:

1. You must have installed and configured the Manager on a separate machine.
2. To set up the Data Warehouse machine, you must have the following:
  - A virtual or physical machine with Red Hat Enterprise Linux 6.6 or later versions of Red Hat Enterprise Linux 6 installed.
  - A subscription to the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** subscription pools.
  - The password from the Manager's `/etc/ovirt-engine/engine.conf.d/10-setup-database.conf` file.
  - Allowed access from the Data Warehouse machine to the Manager database machine's TCP port 5432.
3. To set up the Reports machine, you must have the following:
  - A virtual or physical machine with Red Hat Enterprise Linux 6.6 or later versions of Red Hat Enterprise Linux 6 installed.
  - A subscription to the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** subscription pools.
  - The password from the Data Warehouse machine's `/etc/ovirt-engine-dwh/ovirt-engine-dwhd.conf.d/10-setup-database.conf` file.
  - Allowed access from the Reports machine to the Manager database machine's TCP port 5432.
4. If you choose to use a remote Data Warehouse database or Reports database, you must set up each database before installing the Data Warehouse and Reports services. You must have the following information about each database host:
  - The fully qualified domain name of the host
  - The port through which the database can be reached (5432 by default)
  - The database name
  - The database user
  - The database password

### Procedure 10.3. Step 1: Installing and Configuring Data Warehouse on a Separate Machine

1. Register your system with the Content Delivery Network, entering your Customer Portal user name and password when prompted:

```
subscription-manager register
```

2. Find the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** subscription pools and note down the pool IDs.

```
subscription-manager list --available
```

3. Use the pool IDs located in the previous step to attach the entitlements to the system:

```
subscription-manager attach --pool=pool_id
```

4. Disable all existing repositories:

```
subscription-manager repos --disable=*
```

5. Enable the required repositories:

```
subscription-manager repos --enable=rhel-6-server-rpms
subscription-manager repos --enable=rhel-6-server-supplementary-
rpms
subscription-manager repos --enable=rhel-6-server-rhev-3.6-rpms
subscription-manager repos --enable=jb-eap-6-for-rhel-6-server-
rpms
```

6. Ensure that all packages currently installed are up to date:

```
yum update
```

7. Install the `rhev-dwh-setup` package:

```
yum install rhvm-dwh-setup
```

8. Run the **engine-setup** command to begin configuration of Data Warehouse on the machine:

```
engine-setup
```

9. Press **Enter** to configure Data Warehouse:

```
Configure Data Warehouse on this host (Yes, No) [Yes]:
```

10. Press **Enter** to automatically configure the firewall, or type **No** and press **Enter** to maintain existing settings:

```
Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
```

If you choose to automatically configure the firewall, and no firewall managers are active, you are prompted to select your chosen firewall manager from a list of supported options. Type the name of the firewall manager and press **Enter**. This applies even in cases where only one option is listed.

- Press **Enter** to accept the automatically detected hostname, or enter an alternative hostname and press **Enter**:

```
Host fully qualified DNS name of this server [autodetected host name]:
```

- Answer the following questions about the Data Warehouse database:

```
Where is the DWH database located? (Local, Remote) [Local]:
Setup can configure the local postgresql server automatically for
the DWH to run. This may conflict with existing applications.
Would you like Setup to automatically configure postgresql and
create DWH database, or prefer to perform that manually? (Automatic,
Manual) [Automatic]:
```

Press **Enter** to choose the highlighted defaults, or type your alternative preference and then press **Enter**. If you select **Remote**, you are prompted to provide details about the remote database host.

- Enter the fully qualified domain name and password for the Manager database machine. Press **Enter** to accept the default values in each other field:

```
Engine database host []: engine-db-fqdn
Engine database port [5432]:
Engine database secured connection (Yes, No) [No]:
Engine database name [engine]:
Engine database user [engine]:
Engine database password: password
```

- Confirm your installation settings:

```
Please confirm installation settings (OK, Cancel) [OK]:
```

#### Procedure 10.4. Step 2: Installing and Configuring Reports on a Separate Machine

- Register your system with the Content Delivery Network, entering your Customer Portal user name and password when prompted:

```
subscription-manager register
```

- Find subscription pools containing the repositories required to install Reports:

```
subscription-manager list --available | grep -A8 "Red Hat
Enterprise Linux Server"
subscription-manager list --available | grep -A8 "Red Hat
Enterprise Virtualization"
```

- Use the pool identifiers located in the previous step to attach the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** entitlements to the system:

```
subscription-manager attach --pool=pool_id
```



4. Disable all existing repositories:

```
subscription-manager repos --disable=*
```

5. Enable the required repositories:

```
subscription-manager repos --enable=rhel-6-server-rpms
subscription-manager repos --enable=rhel-6-server-supplementary-
rpms
subscription-manager repos --enable=rhel-6-server-rhev-3.6-rpms
subscription-manager repos --enable=jb-eap-6-for-rhel-6-server-
rpms
```

6. Ensure that all packages currently installed are up to date:

```
yum update
```

7. Install the `rhev-reports-setup` package:

```
yum install rhv-reports-setup
```

8. Run the **engine-setup** command to begin configuration of Reports on the machine:

```
engine-setup
```

9. Press **Enter** to configure Reports:

```
Configure Reports on this host (Yes, No) [Yes]:
```

10. Press **Enter** to automatically configure the firewall, or type **No** and press **Enter** to maintain existing settings:

```
Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
```

If you choose to automatically configure the firewall, and no firewall managers are active, you are prompted to select your chosen firewall manager from a list of supported options. Type the name of the firewall manager and press **Enter**. This applies even in cases where only one option is listed.

11. Press **Enter** to accept the automatically detected hostname, or enter an alternative hostname and press **Enter**:

```
Host fully qualified DNS name of this server [autodetected host
name]:
```

12. Enter the fully qualified domain name of the Manager machine, and then press **Enter**:

```
Host fully qualified DNS name of the engine server []:
```

13. Answer the following questions about the Reports database:

```
Where is the Reports database located? (Local, Remote) [Local]:
Setup can configure the local postgresql server automatically for
the Reports to run. This may conflict with existing applications.
Would you like Setup to automatically configure postgresql and
create Reports database, or prefer to perform that manually?
(Automatic, Manual) [Automatic]:
```

Press **Enter** to choose the highlighted defaults, or type your alternative preference and then press **Enter**. If you select **Remote**, you are prompted to provide details about the remote database host.

14. Enter the fully qualified domain name and password for your Data Warehouse database host. Press **Enter** to accept the default values in each other field:

```
DWH database host []: dwh-db-fqdn
DWH database port [5432]:
DWH database secured connection (Yes, No) [No]:
DWH database name [ovirt_engine_history]:
DWH database user [ovirt_engine_history]:
DWH database password: password
```

15. Press **Enter** to allow setup to sign the Reports certificate and Apache certificate on the Manager via SSH:

```
Setup will need to do some actions on the remote engine server.
Either automatically, using ssh as root to access it, or you will be
prompted to manually perform each such action.
Please choose one of the following:
1 - Access remote engine server using ssh as root
2 - Perform each action manually, use files to copy content around
(1, 2) [1]:
```

16. Press **Enter** to accept the default SSH port, or enter an alternative port number and then press **Enter**:

```
ssh port on remote engine server [22]:
```

17. Enter the root password for the Manager machine:

```
root password on remote engine server manager-fqdn.com:
```

18. Press **Enter** to allow automatic configuration of SSL on Apache:

```
Setup can configure apache to use SSL using a certificate issued
from the internal CA.
Do you wish Setup to configure that, or prefer to perform that
manually? (Automatic, Manual) [Automatic]:
```

19. Set a password for the Reports administrative users (**admin** and **superuser**). Note that the reports system maintains its own set of credentials that are separate to those used for the Manager:

```
Reports power users password:
```

You are prompted to enter the password a second time to confirm it.

20. Confirm your installation settings:

```
Please confirm installation settings (OK, Cancel) [OK]:
```

### Next Steps

Access the Reports Portal at `http://demo.redhat.com/ovirt-engine-reports`, replacing `demo.redhat.com` with the fully qualified domain name of the Manager. If during the Manager installation you selected a non-default HTTP port then append `:port` to the URL, replacing `:port` with the port that you chose.

Log in using the user name **admin** and the password you set during reports installation. Note that the first time you log in to Red Hat Enterprise Virtualization Manager Reports, a number of web pages are generated and, as a result, your initial attempt to log in may take some time to complete.

## 10.3.4. Installing and Configuring Data Warehouse on the Red Hat Enterprise Virtualization Manager and Reports on a Separate Machine

### Overview

Install and configure Data Warehouse on the same system as the Red Hat Enterprise Virtualization Manager, then install and configure Red Hat Enterprise Virtualization Manager Reports on a separate machine. Hosting the Reports service on a separate machine helps to reduce the load on the Manager machine.

Installing this scenario involves two key steps:

1. Install and configure Data Warehouse on the Manager machine.
2. Install and configure Reports on a separate machine.

### Prerequisites

Ensure that you have completed the following prerequisites:

1. You must have installed and configured the Manager on one machine. This is the machine on which you are installing Data Warehouse.
2. To set up the Reports machine, you must have the following:
  - o A virtual or physical machine with Red Hat Enterprise Linux 6.6 or later versions of Red Hat Enterprise Linux 6 installed.
  - o A subscription to the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** entitlement pools.
  - o The password from the Data Warehouse machine's `/etc/ovirt-engine-dwh/ovirt-engine-dwhd.conf.d/10-setup-database.conf` file.

- o Allowed access from the Reports machine to the Manager database machine's TCP port 5432.
3. If you choose to use a remote Data Warehouse database or Reports database, you must set up each database before installing the Data Warehouse and Reports services. You must have the following information about each database host:
    - o The fully qualified domain name of the host
    - o The port through which the database can be reached (5432 by default)
    - o The database name
    - o The database user
    - o The database password
  4. If you are using the self-hosted engine, you must move it to maintenance mode:

```
hosted-engine --set-maintenance --mode=global
```

### Procedure 10.5. Step 1: Installing and Configuring Data Warehouse on the Manager Machine

1. Install the `rhevmdwh` package:

```
yum install rhevm-dwh
```

2. Run the **engine-setup** command to begin configuration of Data Warehouse on the machine:

```
engine-setup
```

3. Press **Enter** to configure Data Warehouse:

```
Configure Data Warehouse on this host (Yes, No) [Yes]:
```

4. Press **Enter** to automatically configure the firewall, or type **No** and press **Enter** to maintain existing settings:

```
Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
```

If you choose to automatically configure the firewall, and no firewall managers are active, you are prompted to select your chosen firewall manager from a list of supported options. Type the name of the firewall manager and press **Enter**. This applies even in cases where only one option is listed.

5. Answer the following questions about the Data Warehouse database:

```
Where is the DWH database located? (Local, Remote) [Local]:
Setup can configure the local postgresql server automatically for
the DWH to run. This may conflict with existing applications.
```

```
Would you like Setup to automatically configure postgresql and
create DWH database, or prefer to perform that manually? (Automatic,
Manual) [Automatic]:
```

Press **Enter** to choose the highlighted defaults, or type your alternative preference and then press **Enter**. If you select **Remote**, you are prompted to provide details about the remote database host.

- For the configuration to take effect, the **ovirt-engine** service must be restarted. The **engine-setup** command prompts you:

```
During execution engine service will be stopped (OK, Cancel) [OK]:
```

Press **Enter** to proceed. The **ovirt-engine** service restarts automatically later in the command.

- Confirm your installation settings:

```
Please confirm installation settings (OK, Cancel) [OK]:
```

### Procedure 10.6. Step 2: Installing and Configuring Reports on a Separate Machine

- Register your system with the Content Delivery Network, entering your Customer Portal user name and password when prompted:

```
subscription-manager register
```

- Find the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** subscription pools and note down the pool IDs.

```
subscription-manager list --available
```

- Use the pool IDs located in the previous step to attach the entitlements to the system:

```
subscription-manager attach --pool=pool_id
```

- Disable all existing repositories:

```
subscription-manager repos --disable=*
```

- Enable the required channels:

```
subscription-manager repos --enable=rhel-6-server-rpms
subscription-manager repos --enable=rhel-6-server-supplementary-
rpms
subscription-manager repos --enable=rhel-6-server-rhev-3.6-rpms
subscription-manager repos --enable=jboss-eap-6-for-rhel-6-server-
rpms
```

- Ensure that all packages currently installed are up to date:

```
yum update
```

- 
7. Install the `rhevms-reports-setup` package:

```
yum install rhevm-reports-setup
```

8. Run the **engine-setup** command to begin configuration of Reports on the machine:

```
engine-setup
```

9. Press **Enter** to configure Reports:

```
Configure Reports on this host (Yes, No) [Yes]:
```

10. Press **Enter** to automatically configure the firewall, or type **No** and press **Enter** to maintain existing settings:

```
Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
```

If you choose to automatically configure the firewall, and no firewall managers are active, you are prompted to select your chosen firewall manager from a list of supported options. Type the name of the firewall manager and press **Enter**. This applies even in cases where only one option is listed.

11. Press **Enter** to accept the automatically detected hostname, or enter an alternative hostname and press **Enter**:

```
Host fully qualified DNS name of this server [autodetected host
name]:
```

12. Enter the fully qualified domain name of the Manager machine, and then press **Enter**:

```
Host fully qualified DNS name of the engine server []:
```

13. Answer the following questions about the Reports database:

```
Where is the Reports database located? (Local, Remote) [Local]:
Setup can configure the local postgresql server automatically for
the Reports to run. This may conflict with existing applications.
Would you like Setup to automatically configure postgresql and
create Reports database, or prefer to perform that manually?
(Automatic, Manual) [Automatic]:
```

Press **Enter** to choose the highlighted defaults, or type your alternative preference and then press **Enter**. If you select **Remote**, you are prompted to provide details about the remote database host.

14. Enter the fully qualified domain name and password for your Data Warehouse database host. Press **Enter** to accept the default values in each other field:

-

```
DWH database host []: dwh-db-fqdn
DWH database port [5432]:
DWH database secured connection (Yes, No) [No]:
DWH database name [ovirt_engine_history]:
DWH database user [ovirt_engine_history]:
DWH database password: password
```

15. Press **Enter** to allow setup to sign the Reports certificate and Apache certificate on the Manager via SSH:

```
Setup will need to do some actions on the remote engine server.
Either automatically, using ssh as root to access it, or you will be
prompted to manually perform each such action.
Please choose one of the following:
1 - Access remote engine server using ssh as root
2 - Perform each action manually, use files to copy content around
(1, 2) [1]:
```

16. Press **Enter** to accept the default SSH port, or enter an alternative port number and then press **Enter**:

```
ssh port on remote engine server [22]:
```

17. Enter the root password for the Manager machine:

```
root password on remote engine server manager-fqdn.com:
```

18. Press **Enter** to allow automatic configuration of SSL on Apache:

```
Setup can configure apache to use SSL using a certificate issued
from the internal CA.
Do you wish Setup to configure that, or prefer to perform that
manually? (Automatic, Manual) [Automatic]:
```

19. Set a password for the Reports administrative users (**admin** and **superuser**). Note that the reports system maintains its own set of credentials that are separate to those used for the Manager:

```
Reports power users password:
```

You are prompted to enter the password a second time to confirm it.

20. Confirm your installation settings:

```
Please confirm installation settings (OK, Cancel) [OK]:
```

### Next Steps

Access the Reports Portal at <http://demo.redhat.com/ovirt-engine-reports>, replacing *demo.redhat.com* with the fully qualified domain name of the Manager. If during the Manager installation you selected a non-default HTTP port then append *:port* to the URL, replacing *:port* with the port that you chose.

Log in using the user name **admin** and the password you set during reports installation. Note that the first time you log in to Red Hat Enterprise Virtualization Manager Reports, a number of web pages are generated and, as a result, your initial attempt to log in may take some time to complete.

### 10.3.5. Installing and Configuring Data Warehouse on a Separate Machine and Reports on the Red Hat Enterprise Virtualization Manager

#### Overview

Install and configure Data Warehouse on a separate host from that on which the Red Hat Enterprise Virtualization Manager is installed, then install and configure Red Hat Enterprise Virtualization Manager Reports on the Manager machine. Hosting the Data Warehouse service on a separate machine helps to reduce the load on the Manager machine. Note that hosting the Manager and Reports on the same machine means that these processes will share CPU and memory.

Installing this scenario involves two key steps:

1. Install and configure Data Warehouse on a separate machine.
2. Install and configure Reports on the Manager machine.

#### Prerequisites

Ensure that you have completed the following prerequisites:

1. You must have installed and configured the Manager on a separate machine.
2. To set up the Data Warehouse machine, you must have the following:
  - o A virtual or physical machine with Red Hat Enterprise Linux 6.6 or later versions of Red Hat Enterprise Linux 6 installed.
  - o A subscription to the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** entitlement pools.
  - o The password from the Manager's `/etc/ovirt-engine/engine.conf.d/10-setup-database.conf` file.
  - o Allowed access from the Data Warehouse machine to the Manager database machine's TCP port 5432.
3. To set up the Reports machine, you must have the following:
  - o The password from the Data Warehouse machine's `/etc/ovirt-engine-dwh/ovirt-engine-dwhd.conf.d/10-setup-database.conf` file.
4. If you choose to use a remote Data Warehouse database or Reports database, you must set up each database before installing the Data Warehouse and Reports services. You must have the following information about each database host:
  - o The fully qualified domain name of the host
  - o The port through which the database can be reached (5432 by default)
  - o The database name
  - o The database user



- o The database password
5. If you are using the self-hosted engine, you must move it to maintenance mode:

```
hosted-engine --set-maintenance --mode=global
```

### Procedure 10.7. Step 1: Installing and Configuring Data Warehouse on a Separate Machine

1. Register your system with the Content Delivery Network, entering your Customer Portal user name and password when prompted:

```
subscription-manager register
```

2. Find the **Red Hat Enterprise Linux Server** and **Red Hat Enterprise Virtualization** subscription pools and note down the pool IDs.

```
subscription-manager list --available
```

3. Use the pool IDs located in the previous step to attach the entitlements to the system:

```
subscription-manager attach --pool=pool_id
```

4. Disable all existing repositories:

```
subscription-manager repos --disable=*
```

5. Enable the required channels:

```
subscription-manager repos --enable=rhel-6-server-rpms
subscription-manager repos --enable=rhel-6-server-supplementary-rpms
subscription-manager repos --enable=rhel-6-server-rhev-3.6-rpms
subscription-manager repos --enable=jb-eap-6-for-rhel-6-server-rpms
```

6. Ensure that all packages currently installed are up to date:

```
yum update
```

7. Install the `rhev-dwh-setup` package:

```
yum install rhvm-dwh-setup
```

8. Run the **engine-setup** command to begin configuration of Data Warehouse on the machine:

```
engine-setup
```

9. Press **Enter** to configure Data Warehouse:

```
Configure Data Warehouse on this host (Yes, No) [Yes]:
```

- Press **Enter** to automatically configure the firewall, or type **No** and press **Enter** to maintain existing settings:

```
Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
```

If you choose to automatically configure the firewall, and no firewall managers are active, you are prompted to select your chosen firewall manager from a list of supported options. Type the name of the firewall manager and press **Enter**. This applies even in cases where only one option is listed.

- Press **Enter** to accept the automatically detected hostname, or enter an alternative hostname and press **Enter**:

```
Host fully qualified DNS name of this server [autodetected host
name]:
```

- Answer the following questions about the Data Warehouse database:

```
Where is the DWH database located? (Local, Remote) [Local]:
Setup can configure the local postgresql server automatically for
the DWH to run. This may conflict with existing applications.
Would you like Setup to automatically configure postgresql and
create DWH database, or prefer to perform that manually? (Automatic,
Manual) [Automatic]:
```

Press **Enter** to choose the highlighted defaults, or type your alternative preference and then press **Enter**. If you select **Remote**, you are prompted to provide details about the remote database host.

- Enter the fully qualified domain name and password for the Manager database machine. Press **Enter** to accept the default values in each other field:

```
Engine database host []: engine-db-fqdn
Engine database port [5432]:
Engine database secured connection (Yes, No) [No]:
Engine database name [engine]:
Engine database user [engine]:
Engine database password: password
```

- Confirm your installation settings:

```
Please confirm installation settings (OK, Cancel) [OK]:
```

### Procedure 10.8. Step 2: Installing and Configuring Reports on the Manager Machine

- Install the `rhev-reports` package:

```
yum install rhvm-reports
```

- Run the `engine-setup` command to begin configuration of Reports on the machine:

```
engine-setup
```

3. Press **Enter** to configure Reports:

```
Configure Reports on this host (Yes, No) [Yes]:
```

4. Press **Enter** to automatically configure the firewall, or type **No** and press **Enter** to maintain existing settings:

```
Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
```

```
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
```

If you choose to automatically configure the firewall, and no firewall managers are active, you are prompted to select your chosen firewall manager from a list of supported options. Type the name of the firewall manager and press **Enter**. This applies even in cases where only one option is listed.

5. Answer the following questions about the Reports database:

```
Where is the Reports database located? (Local, Remote) [Local]:
Setup can configure the local postgresql server automatically for
the Reports to run. This may conflict with existing applications.
Would you like Setup to automatically configure postgresql and
create Reports database, or prefer to perform that manually?
(Automatic, Manual) [Automatic]:
```

Press **Enter** to choose the highlighted defaults, or type your alternative preference and then press **Enter**. If you select **Remote**, you are prompted to provide details about the remote database host.

6. Enter the fully qualified domain name and password for your Data Warehouse database host. Press **Enter** to accept the default values in each other field:

```
DWH database host []: dwh-db-fqdn
DWH database port [5432]:
DWH database secured connection (Yes, No) [No]:
DWH database name [ovirt_engine_history]:
DWH database user [ovirt_engine_history]:
DWH database password: password
```

7. Set a password for the Reports administrative users (**admin** and **superuser**). Note that the reports system maintains its own set of credentials that are separate to those used for the Manager:

```
Reports power users password:
```

You are prompted to enter the password a second time to confirm it.

8. For the configuration to take effect, the **ovirt-engine** service must be restarted. The **engine-setup** command prompts you:

■

During execution engine service will be stopped (OK, Cancel) [OK]:

Press **Enter** to proceed. The **ovirt-engine** service restarts automatically later in the command.

9. Confirm your installation settings:

Please confirm installation settings (OK, Cancel) [OK]:

### Next Steps

Access the Reports Portal at <http://demo.redhat.com/ovirt-engine-reports>, replacing *demo.redhat.com* with the fully qualified domain name of the Manager. If during the Manager installation you selected a non-default HTTP port then append *:port* to the URL, replacing *:port* with the port that you chose.

Log in using the user name **admin** and the password you set during reports installation. Note that the first time you log in to Red Hat Enterprise Virtualization Manager Reports, a number of web pages are generated and, as a result, your initial attempt to log in may take some time to complete.

# APPENDIX A. MANUALLY INSTALLING THE MANAGER OPERATING SYSTEM

To set up the Manager virtual machine in the self-hosted engine environment, you can choose to manually install the Manager operating system or you can use the RHEV-M Virtual Appliance to ease the process. The following procedure guides you through the manual installation process.

## Procedure A.1. Manually Installing the Manager Operating System

### 1. Configuring the Virtual Machine

The **hosted-engine** script creates a virtual machine to be configured as the Red Hat Enterprise Virtualization Manager. The virtual machine is referred to in this procedure as HostedEngine-VM. Specify the boot device and, if applicable, the path name of the installation media, the CPU type, the number of virtual CPUs, and the disk size. Specify a MAC address for HostedEngine-VM, or accept a randomly generated one. The MAC address can be used to update your DHCP server prior to installing the operating system on the virtual machine. Specify memory size and console connection type for the creation of HostedEngine-VM.

```
Please specify the device to boot the VM from (cdrom, disk, pxe)
[cdrom]:
```

```
The following CPU types are supported by this host:
```

- model\_Penryn: Intel Penryn Family
- model\_Conroe: Intel Conroe Family

```
Please specify the CPU type to be used by the VM [model_Penryn]:
```

```
Please specify the number of virtual CPUs for the VM [Defaults to
minimum requirement: 2]:
```

```
Please specify the disk size of the VM in GB [Defaults to minimum
requirement: 25]:
```

```
You may specify a MAC address for the VM or accept a randomly
generated default [00:16:3e:77:b2:a4]:
```

```
Please specify the memory size of the VM in MB [Defaults to minimum
requirement: 4096]:
```

```
Please specify the console type you want to use to connect to the VM
(vnc, spice) [vnc]:
```

### 2. Configuring the Hosted Engine

Specify the name for the self-hosted engine host to be identified in the Red Hat Enterprise Virtualization environment, and the password for the **admin@internal** user to access the Administration Portal. Provide the FQDN for HostedEngine-VM; this procedure uses the FQDN *manager.example.com*. Finally, provide the name and TCP port number of the SMTP server, the email address used to send email notifications, and a comma-separated list of email addresses to receive these notifications.

```
Enter the name which will be used to identify this host inside the
Administrator Portal [hosted_engine_1]: Host-HE1
```

```
Enter 'admin@internal' user password that will be used for accessing
the Administrator Portal:
```

```
Confirm 'admin@internal' user password:
```

```
Please provide the FQDN for the engine you want to use. This needs
to match the FQDN that you will use for the engine installation
within the VM: manager.example.com
```

```
Please provide the name of the SMTP server through which we will
send notifications [localhost]:
```

```
Please provide the TCP port number of the SMTP server [25]:
```

```
Please provide the email address from which notifications will be
sent [root@localhost]:
```

```
Please provide a comma-separated list of email addresses which will
get notifications [root@localhost]:
```

### 3. Configuration Preview

Before proceeding, the **hosted-engine** script displays the configuration values you have entered, and prompts for confirmation to proceed with these values.

```
Bridge interface : eth1
Engine FQDN : manager.example.com
Bridge name : rhevm
SSH daemon port : 22
Firewall manager : iptables
Gateway address : X.X.X.X
Host name for web application : Host-HE1
Host ID : 1
Image size GB : 25
Storage connection :
storage.example.com:/hosted_engine/nfs
Console type : vnc
Memory size MB : 4096
MAC address : 00:16:3e:77:b2:a4
Boot type : pxe
Number of CPUs : 2
CPU Type : model_Penryn
```

```
Please confirm installation settings (Yes, No)[Yes]:
```

### 4. Creating HostedEngine-VM

The script creates the virtual machine to be configured as HostedEngine-VM and provides connection details. You must install an operating system on HostedEngine-VM before the **hosted-engine** script can proceed on Host-HE1.

```
[INFO] Stage: Transaction setup
```

```
...
```

```
[INFO] Creating VM
```

```
You can now connect to the VM with the following command:
```

```
/usr/bin/remote-viewer vnc://localhost:5900
```

```
Use temporary password "5379skAb" to connect to vnc console.
```

```
Please note that in order to use remote-viewer you need to be able
to run graphical applications.
```

```
This means that if you are using ssh you have to supply the -Y flag
(enables trusted X11 forwarding).
```

```
Otherwise you can run the command from a terminal in your preferred
desktop environment.
```

```
If you cannot run graphical applications you can connect to the
graphic console from another host or connect to the console using
the following command:
```

```
virsh -c qemu+tls://Test/system console HostedEngine
```

```
If you need to reboot the VM you will need to start it manually
using the command:
```

```
hosted-engine --vm-start
```

```
You can then set a temporary password using the command:
```

```
hosted-engine --add-console-password
```

```
The VM has been started. Install the OS and shut down or reboot it.
To continue please make a selection:
```

- ```
(1) Continue setup - VM installation is complete
(2) Reboot the VM and restart installation
(3) Abort setup
(4) Destroy VM and abort setup
```

```
(1, 2, 3, 4)[1]:
```

Connect to the virtual machine using the VNC protocol with the following command. Replace *FQDN* with the fully qualified domain name or the IP address of Host-HE1.

```
/usr/bin/remote-viewer vnc://FQDN:5900
```

5. Installing the Virtual Machine Operating System

Connect to HostedEngine-VM, the virtual machine created by the **hosted-engine** script, and install a Red Hat Enterprise Linux 6.7 operating system.

6. Synchronizing the Host and the Virtual Machine

Return to Host-HE1 and continue the **hosted-engine** deployment script by selecting option 1:

```
(1) Continue setup - VM installation is complete
```

7. Installing the Manager

Connect to HostedEngine-VM, and subscribe to the appropriate Red Hat Enterprise Virtualization Manager repositories. See [Subscribing to the Required Entitlements](#) in the Installation Guide.

Ensure that the most up-to-date versions of all installed packages are in use, and install the `rhev` packages.

```
# yum update
```

```
# yum install rhvm
```

8. Configuring HostedEngine-VM

Configure the engine on HostedEngine-VM. This identifies the existing files and database.

```
# engine-setup
```

```
[ INFO ] Stage: Initializing
[ INFO ] Stage: Environment setup
Configuration files: ['/etc/ovirt-engine-setup.conf.d/10-
packaging.conf', '/etc/ovirt-engine-setup.conf.d/20-setup-ovirt-
post.conf']
Log file: /var/log/ovirt-engine/setup/ovirt-engine-setup-
20140304075238.log
Version: otopi-1.1.2 (otopi-1.1.2-1.el6ev)
[ INFO ] Stage: Environment packages setup
[ INFO ] Yum Downloading: rhel-65-zstream/primary_db 2.8 M(70%)
[ INFO ] Stage: Programs detection
[ INFO ] Stage: Environment setup
```

```
[ INFO ] Stage: Environment customization

--== PACKAGES ==--

[ INFO ] Checking for product updates...
[ INFO ] No product updates found

--== NETWORK CONFIGURATION ==--

Setup can automatically configure the firewall on this system.
Note: automatic configuration of the firewall may overwrite current
settings.
Do you want Setup to configure the firewall? (Yes, No) [Yes]:
[ INFO ] iptables will be configured as firewall manager.

--== DATABASE CONFIGURATION ==--

--== OVIRT ENGINE CONFIGURATION ==--

Skipping storing options as database already prepared

--== PKI CONFIGURATION ==--

PKI is already configured

--== APACHE CONFIGURATION ==--

--== SYSTEM CONFIGURATION ==--

--== END OF CONFIGURATION ==--

[ INFO ] Stage: Setup validation
[ INFO ] Cleaning stale zombie tasks

--== CONFIGURATION PREVIEW ==--

Database name                : engine
Database secured connection  : False
Database host                 : X.X.X.X
Database user name           : engine
Database host name validation : False
Database port                 : 5432
NFS setup                     : True
Firewall manager              : iptables
Update Firewall               : True
Configure WebSocket Proxy     : True
Host FQDN                     : manager.example.com
NFS mount point               : /var/lib/exports/iso
Set application as default page : True
Configure Apache SSL          : True

Please confirm installation settings (OK, Cancel) [OK]:
```


Confirm the settings. Upon completion, the setup provides an SSH fingerprint and an internal Certificate Authority hash.

9. Synchronizing the Host and the Manager

Return to Host-HE1 and continue the **hosted-engine** deployment script by selecting option 1:

```
(1) Continue setup - engine installation is complete
```

```
[ INFO ] Engine replied: DB Up!Welcome to Health Status!  
[ INFO ] Waiting for the host to become operational in the engine.  
This may take several minutes...  
[ INFO ] Still waiting for VDSM host to become operational...  
[ INFO ] The VDSM Host is now operational  
Please shutdown the VM allowing the system to launch it as  
a monitored service.  
The system will wait until the VM is down.
```

10. Shutting Down HostedEngine-VM

Shut down HostedEngine-VM.

```
# shutdown -h now
```

11. Setup Confirmation

Return to Host-HE1 to confirm it has detected that HostedEngine-VM is down.

```
[ INFO ] Enabling and starting HA services  
Hosted Engine successfully set up  
[ INFO ] Stage: Clean up  
[ INFO ] Stage: Pre-termination  
[ INFO ] Stage: Termination
```

APPENDIX B. REVISION HISTORY

Revision 3.6-23	Wed 24 Jan 2018	Red Hat Enterprise Virtualization Documentation Team
BZ#1529957 - Added a procedure for upgrading from a RHEL 6 environment to a RHEL 7 environment.		
Revision 3.6-22	Thu 3 Aug 2017	Red Hat Enterprise Virtualization Documentation Team
BZ#1369690 - Added information about updating the network name.		
Revision 3.6-21	Wed 1 Mar 2017	Red Hat Enterprise Virtualization Documentation Team
BZ#1386337 - Added self-hosted engine storage information.		
Revision 3.6-20	Fri 2 Dec 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1349351 - Corrected the order of steps for removing a RHEV-H self-hosted engine host.		
BZ#1364266 - Updated the instructions for upgrading hosts in a cluster from Red Hat Enterprise Linux 6 to Red Hat Enterprise Linux 7.		
Revision 3.6-19	Mon 12 Sep 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1328382 - Updated the upgrade instructions.		
Revision 3.6-18	Wed 24 Aug 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1331644 - Added an installation options section and moved the workflow diagram to the first chapter.		
Revision 3.6-17	Wed 27 July 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1353824 - Updated the Manager OS requirements to 6.6 or later versions of Red Hat Enterprise Linux 6.		
Revision 3.6-16	Mon 4 July 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1350314 - Updated the steps for adding self-hosted engine hosts on RHEV-H.		
Revision 3.6-15	Wed 29 June 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1258754 - Added troubleshooting information for redeploying failed self-hosted engine deployments.		
BZ#1317740 - Clarified the storage requirement for the RHEV-M Virtual Appliance.		
BZ#1335315 - Added a note on the importance of synchronizing system clocks.		
Revision 3.6-14	Wed 25 May 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1312224 - Updated engine-backup examples to show that the --scope parameter can be used multiple times in one command.		
BZ#1315668 - Separated the screen command from hosted-engine deploy command.		
BZ#1288966 - Added a procedure on Migrating to a Self-Hosted Environment using the RHEV-M Virtual Appliance.		
BZ#1301447 - Updated the RHEL 6 to 7 upgrade procedure with in-cluster upgrade instructions.		
BZ#1334777 - Updated instructions to highlight the importance of creating another data domain in the self-hosted engine setup procedures.		
Revision 3.6-13	Mon 18 Apr 2016	Red Hat Enterprise Virtualization Documentation Team

[BZ#1317740](#) - Updated the storage requirements for RHEV-H installation, and corrected the link to the RHEVM Virtual Appliance.

[BZ#1306517](#) - Added an overview and diagrams of the backup and restoration procedure.

[BZ#1293971](#) - Added basic troubleshooting commands.

Revision 3.6-12	Wed 23 Mar 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1317378 - Added a link to a Customer Portal solution that outlines steps for enabling a new Manager virtual machine and removing a dead Manager virtual machine in scenarios where the Manager database is restored successfully, but the Manager virtual machine appears to be Down and cannot be migrated to another self-hosted engine host.		
Revision 3.6-11	Fri 11 Mar 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1306212 - Changed 'yum update rhvm-setup' to 'yum update rhvm*setup*' so that any installed data warehouse, reports, or vmconsole packages will get updated as well.		
Revision 3.6-10	Wed 09 Mar 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1188679 - Added instructions on how to upgrade from a 3.5 self-hosted engine running on version 6 hosts to a 3.6 self-hosted engine environment running on version 7 hosts.		
BZ#1282280 - Updated the overview and prerequisites section of the Backing up and Restoring a RHEL-Based Self-Hosted Environment chapter.		
BZ#1263955 - Added the --provision-db option to the Restoring the Self-Hosted Engine Manager section.		
BZ#1288942 - Added content on the two new buttons available in the Hosted Engine screen.		
Revision 3.6-9	Tue 01 Mar 2016	Red Hat Enterprise Virtualization Documentation Team
Updated 3.5 documentation links to 3.6.		
Revision 3.6-8	Mon 22 Feb 2016	Red Hat Enterprise Virtualization Documentation Team
Initial revision for Red Hat Enterprise Virtualization 3.6 general availability.		
Revision 3.6-7	Fri 19 Feb 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1301411 - Added installation workflow diagrams.		
Revision 3.6-6	Wed 27 Jan 2016	Red Hat Enterprise Virtualization Documentation Team
BZ#1279930 - Removed superfluous rhel-7-server-optional-rpms and rhel-7-server-supplementary-rpms channels.		
BZ#1293623 - Updated repos in upgrade topics.		
BZ#1151265 - Added new topic 'Removing a Host from a Self-Hosted Engine Environment'.		
BZ#1288672 - Added a note warning that configuring a bonded and vlan-tagged network interface as the management bridge is currently not supported.		
Revision 3.6-5	Wed 23 Dec 2015	Red Hat Enterprise Virtualization Documentation Team
BZ#1283796 - Updated self-hosted engine installation steps to include a manual Manager installation procedure, and clarify that using the RHEV-M Virtual Appliance is optional.		
Revision 3.6-4	Tue 08 Dec 2015	Red Hat Enterprise Virtualization Documentation Team
BZ#1275504 - Clarified the topic 'Migrating to a Self-Hosted Environment'.		
BZ#1285598 - Added procedure 'Migrating the Self-Hosted Engine Database to a Remote Server Database'.		
BZ#1218312 - Added a note that SSH password authentication is not enabled by default, and steps to enable it.		

Revision 3.6-3

Wed 18 Nov 2015

**Red Hat Enterprise Virtualization
Documentation Team**

Final revision for Red Hat Enterprise Virtualization 3.6 beta.

Revision 3.6-2

Wed 18 Nov 2015

**Red Hat Enterprise Virtualization
Documentation Team**

[BZ#1255231](#) - Updated information on using engine appliance for deploying self-hosted engine.

[BZ#1279930](#) - Added 'rhel-7-server-optional-rpms' to required repos.

[BZ#1200649](#) - Implemented suggested style updates.

[BZ#1281642](#) - Added step to disable all repositories after subscribing to a pool id.

Revision 3.6-1

Mon 31 Aug 2015

**Red Hat Enterprise Virtualization
Documentation Team**

Initial creation for the Red Hat Enterprise Virtualization 3.6 release.